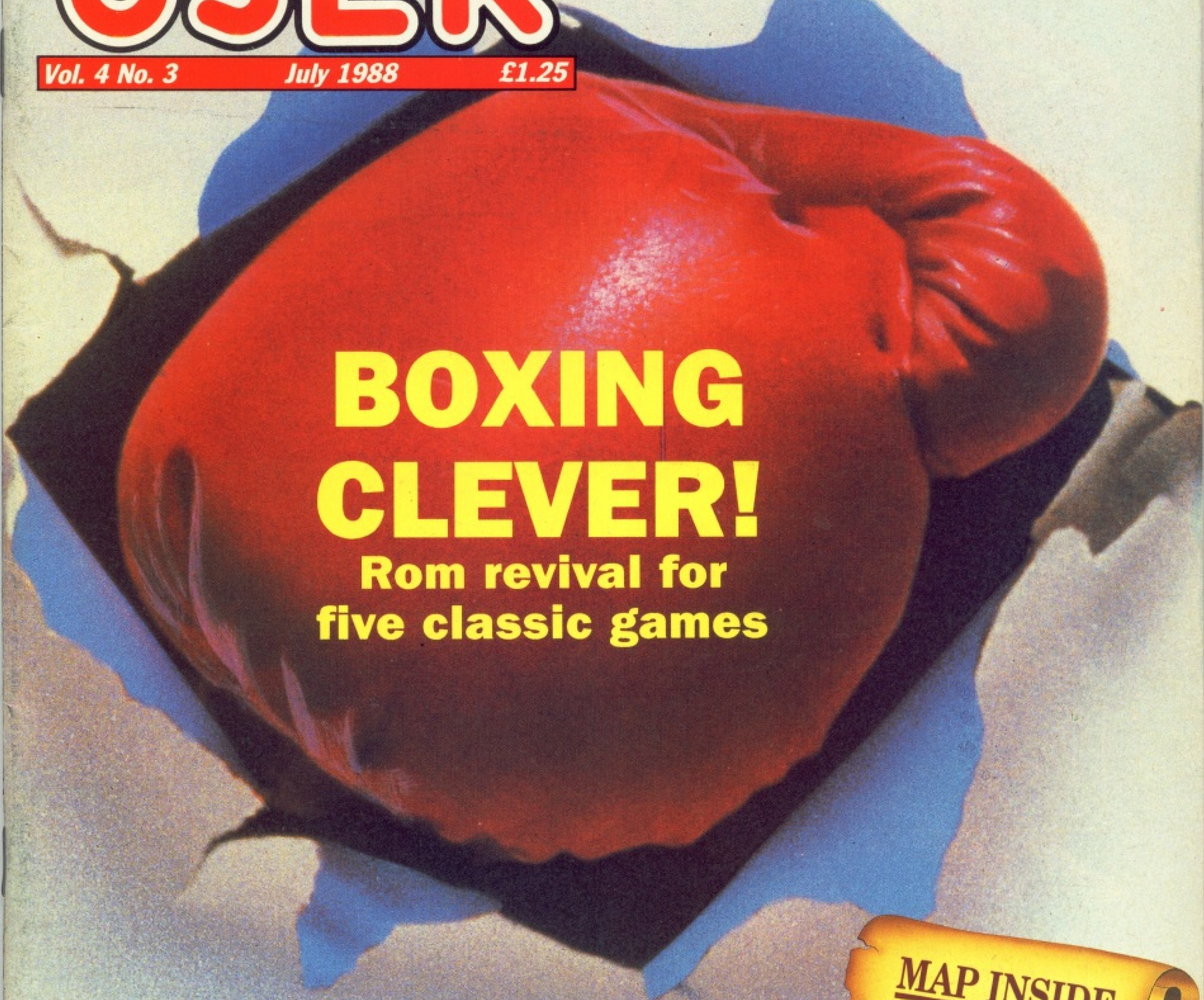
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ATARI USER

Vol. 4 No. 3 July 1988 £1.25

PLAY **Nyout**

an ancient game of strategy



BOXING CLEVER!

Rom revival for five classic games

MAP INSIDE

Discover the treacherous caves of FORT APOCALYPSE

REVIEWS Cops 'n' Robbers, Jinxter, Lode Runner, Spooky Castle

UTILITIES Improved checksums, file recoverer, word count

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In this delightful game you control BLOB, the Biologically-Operated Being, navigating him through 500 action-packed screens to rebuild the unstable planet's core.

Bubble Bus' Starquake is one of the biggest-selling games for home micros, due to its incredibly-addictive gameplay and cleverly-animated graphics. It has received such accolades as Game of the Month in *Computer and Video Games*, and was awarded a *Crash Smash*.

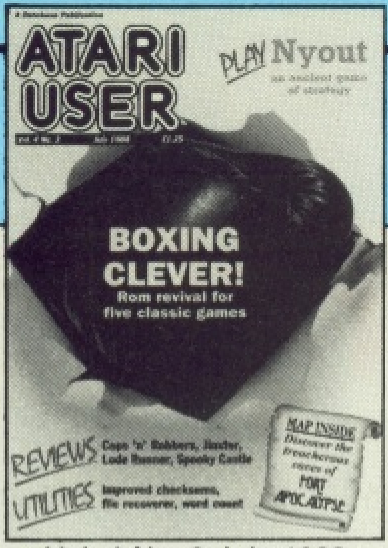
● *What reviewer Bob Chappell said about the Atari version:*

'Starquake is top-notch fare . . . quality dripping from every byte'

Don't miss out on this tremendous offer – fill in the coupon on Page 53 without delay

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Atari 8-bit (48k minimum)	Starquake	Tape	£8.95	£4.95	£4	FREE
		Disc	£12.95	£6.95	£6	FREE

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Vol. 4 No. 3 July 1988

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Prestel Mailbox: 614568383

Fax: 0625 879966

Published by:
Database Publications Ltd,
Europa House, Adlington Park,
Adlington, Macclesfield, SK10 4NP

ABC 33,573 January-June, 1986

Subscription rates for
12 issues, post free:

£15 – UK
£18 – Europe (incl. Eire)
£33 – Overseas (Airmail)

ISSN 0266-545X

"Atari User" welcomes program listings and articles for publication. Material should be typed or computer-printed, and preferably double-spaced. Program listings should be accompanied by cassette tape or disc. Please enclose stamped, self-addressed envelope, otherwise the return of material cannot be guaranteed. Contributions accepted for publication by Database Publications Ltd will be on an all-rights basis.

News trade distribution: Europress Sales and Distribution Limited, Unit 1, Burgess Road, Ivyhouse Lane, Hastings, East Sussex TN35 4NR. Tel: 0424 430422.

Contents

Get it right! II

All major listings in this issue are accompanied by checksums to help you overcome typing mistakes. For full details of how they work, see the article on Page 36 of this issue.

Gallup Software Chart

THIS MONTH	LAST MONTH	TITLE (Software House)	COMMENTS	PRICE
1	▲ 7	ZYBEX *Zeppelin*	New software house has a success on its hands with Zybex. More new products are planned too.	2.99
2	●	REVENGE 2 *Mastertronic*	Geff Minter's long-awaited sequel to Revenge of the Mutant Camels – as strange as ever.	1.99
3	▼ 1	GRAND PRIX SIMULATOR *Code Masters*	This simulator has been ousted from its number one spot – but it will be around for a long while yet.	1.99
4	▲ 12	RIVER RESCUE *Alternative*	Budget house Alternative has a prolific output and this release of an old title has proved to be popular.	1.99
5	▼ 2	SPEED ACE *Zeppelin*	Zeppelin's second title in the Top Five but now heading down. New one to look out for is Draconis.	2.99
6	▼ 5	SPOOKY CASTLE *Atlantis*	You can read the review in this issue of *Atari User*. It's even difficult to get off the battlements.	1.99
7	▼ 6	STEVE DAVIS SNOOKER *Blue Ribbon*	Another one which made a repackaged comeback. Good for its genre and deserved the number 3 position it achieved in May.	1.99
8	▲ 17	LEAGUE CHALLENGE *Altantis*	An unusual game from Atlantis, but excellent value at the price for football enthusiasts.	1.99
9	●	MATTA BLATTA *Silverbird*	Budget houses continue to dominate the charts, and this is the new one from the relaunched Telecom budget range.	1.99
10	●	FOUR GREAT GAMES 3 *Micro Value*	Micro Value presents you here with four full-priced games – our favourites being Rebound and Phantom.	3.99
11	●	ATTACK OF THE MUTANT CAMELS *Mastertronic*	If you have never taken on these monsterous beings this is you chance. Worth buying at the price.	1.99
12	▼ 4	SPACE SHUTTLE *Firebird*	An old but good scenario, and again at the price you cannot go wrong. A nice simulation.	1.99
13	●	KIK START *Mastertronic*	For motorbike specialists. Not too special, yet a good introduction to this sort of game.	1.99
14	●	SPY VS SPY *Databyte*	Split screen entry into the world of Spycatcher and espionage. Great game for two players.	9.95
15	▼ 11	BMX SIMULATOR *Code Masters*	Codemasters is renowned for its simulations with nice graphics, good sound and fun.	1.99
16	●	COPS 'N' ROBBERS *Atlantis*	Dubious content both as a game and as a concept. Read our reviewer's comments in this issue.	1.99
17	▼ 3	WINTER OLYMPIAD *Tynesoft*	Action-packed events for the sportsman, and if you can't face the snow there is Summer Olympiad to look forward to.	9.95
18	●	WARHAWK *Firebird*	Great music but let down by the graphics. Let's hope that the Silverbird range improves.	1.99
19	●	UNIVERSAL HERO *Mastertronic*	A cave complex is at your disposal with good use of sprites throughout this addictive multi-level adventure.	1.99
20	●	TRANSMUTER *Code Masters*	A scramble-type game which plays well and scrolls smoothly – a non-simulator title from Code Masters.	1.99

Sales up, income down

ATARI Corporation's results for the first quarter of 1988 show an increase in net sales worldwide compared with the same period last year – but a $10 million drop in net income.

The figures, however, are distorted by the inclusion of results from the Federated Group – the American chain of retail outlets which Atari acquired in October 1987.

With the Group's results taken out of the equation, Atari's figures show a 50 per cent increase in net sales from $65.1 to $97.7 million, but little change in net income.

Despite the figures, Atari president Sam Tramiel remains optimistic. "The Federated Group is now approaching a break even point", he said.

"The fourth quarter, the season's strongest, should show a modest profit". The shortage – and price – of dram chips has also hit results. "The company has opted to absorb the additional dram costs rather than increase prices", he continued.

"It is the company's view that the dram shortage and related high cost will begin to ease later this year".







Atari plans big TV drive

ATARI, determined to capture as much of the Christmas market as possible, is to spend £400,000 on TV advertising to boost sales of the 130XE and VCS 2600 games consoles.

Plans to promote the machines before last December's rush failed when the IBA objected to the content of the proposed commercials.

A spokesman for the IBA told *Atari User* the objection to the earlier scripts had been that the advert did not comply with its code of practice.

"Children's ability to distinguish between fact and fantasy will vary according to their age and individual personality", he said.

"With this in mind, no performance of toys and games must be simulated by the excess use of imaginary backgrounds or special effects".

A spokesman for Atari said: "We were caught out last year by the IBA's rules on advertising.

"However, our proposed campaign meets all its criteria and the new commercials are sure to attract a tremendous amount of interest from first time computer buyers".

GAMES MACHINE ROMS FLOODING IN

STAND by for action on the VCS 2600 games machine, with no less than 18 new titles from Palan Electronics (01-368 5545).

The massive release of rom cartridges follows an exclusive European deal with Activision. "We have already imported 200,000 units for the VCS", said Graham Cook, Palan's UK sales manager.

"Up to now the machine has not been well supported in this country even though it is very popular in other parts of Europe.

"We plan to make as many titles as possible available so the machine can get the recognition that it truly deserves", he said.

Palan Electronics has signed agreements to import around 400,000 units, which it feels will be required to meet the demands of existing users.

"The market for the VCS 2600, and for rom cartridges, is potentially massive", said Cook.

All of Palan's games will retail for £9.99. Titles include Moonsweeper, Fire Fighter, Laserblast, Demon Attack, Seahawk, Kung-Fu Master and Star Voyager.

Online charges held

DESPITE this month's surprise Micronet/Prestel price increases, MicroLink has denied reports BT is to force it into also raising its charges.

From July 1 Micronet/Prestel subs go up 21 per cent from £66 to £79.95 a year for home users, with business users paying £119.95.

Peak time charges are to rise from 6p a minute to 7p, and free off-peak usage has been scrapped – users will now have to pay 1p a minute.

Full peak time rates will now apply on Saturdays between 8am and 6pm.

However, MicroLink says its annual subscription will remain at £36 for home and business users alike and it will continue to operate off-peak rates for the whole of Saturday and Sunday.

Atari pioneer returns

THE Atari wheel seems to have gone full circle: Nolan Bushnell is returning to the company he founded – to design video games.

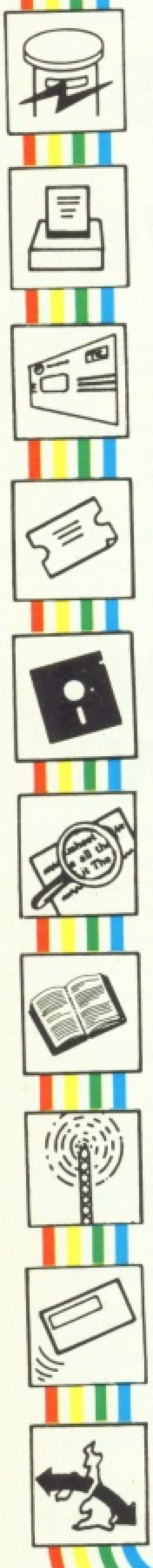
After selling Atari in 1976, Bushnell set up his own toy company, Axlon, which has been less than successful of late. Axlon will now assume the role of research and development facility, drawing royalties from the sale of technology, while Bushnell concentrates his activitie on video game design.

The move comes as Atari gears up for a new drive into the home entertainment market, currently worth an estimated $1 billion in the States – and still growing.

The games – an as yet unspecified number – will be developed exclusively for Atari's 2600 and 7800 consoles and the first releases are expected to be on the market before the end of the year.

Link your Atari to the outside world with...

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Electronic mail – The cheapest and fastest form of communication possible. It costs the same to send a message to one mailbox as to 500!

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Telemessages – Type in your message before 8pm and delivery is guaranteed by first post the next day (except Sunday), anywhere in the UK and USA.

Tele-booking – Reserve train and theatre tickets, check flight details worldwide, or order from a vast range of products – from flowers to floppy discs.

Telesoftware – Download directly into your Atari any program from the ever-growing library now available on MicroLink – both games and utilities.

Company searches – Obtain facts about any British limited company in seconds, and fully analysed financial information on over 100,000 major companies.

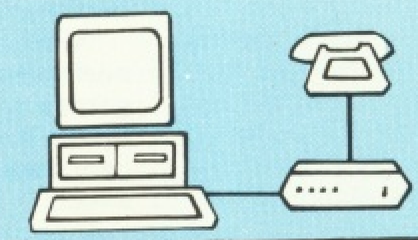
Translation – Access the biggest and most up-to-date multi-lingual dictionary in the world, with over 380,000 words.

News – Use the powerful search commands to pinpoint vital business information from the world's leading news services, newspapers and periodicals.

Radiopaging – If you also have a pocket radiopager you'll be alerted each time an urgent message arrives in your mailbox. So you're always in touch.

Gateways – Get through to New York in just five seconds – or key into the EEC computer in Luxembourg, which links you to 600 databases throughout Europe.

When you join MicroLink you've got the world of communications at your fingertips – 24 hours a day. You'll have immediate access to ALL the facilities offered by Telecom Gold ... and a great deal more besides.



All you need – apart from your Atari – is a modem, which plugs into your telephone wall socket, plus suitable communications software.

We have provided two possible options on the left.

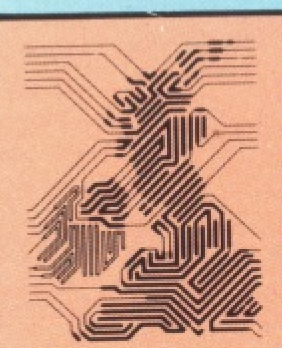
Whichever equipment you use, you will be able to call MicroLink, open your mailbox, save to disc any messages waiting for you, and disconnect in as little as two minutes.

Two recommended packages

If you have an 850 interface:
Pace Nightingale manual modem + cable (£116.15) PLUS Mini Office II (£19.95).
Total price: £136.10.

If you don't have an interface:
Miracle WS2000 V21, V23 modem + Datatari interface + cable + Datatari software.
Total price: £149.95.

With either combination you can also log on to other databases and bulletin boards all round the world.



More than 90 per cent of subscribers can connect to the MicroLink computer at local call rates.

TO FIND OUT MORE
Fill in the coupon and send it to the address below. You will receive full details of services and costs, together with an application form. Complete this and within days you and your Atari will be able to use all the services of MicroLink and Telecom Gold.

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ATU 7

Your HINTS & TIPS

Crystal Raider

THIS month's hints start in the form of a map to the superb Crystal Raider game by Mastertronic. Unfortunately, the author forgot to put his or her name on it, but thanks anyway.

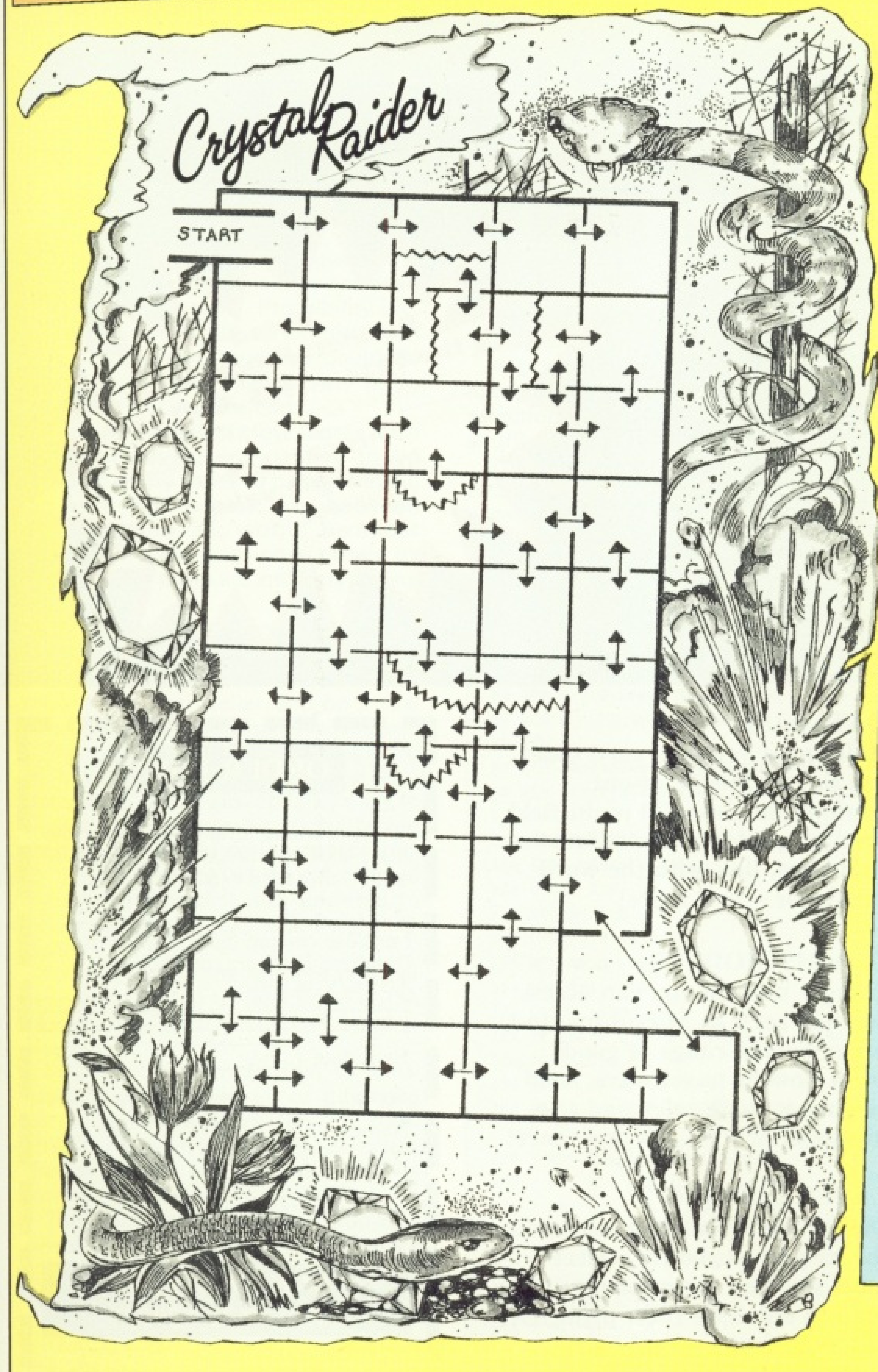
The map shows all the rooms and their entrances and exits. Some are split into two sections and others allow you to bypass large sections of the game to get to the exit quickly.

Following the map carefully should make it possible for you to complete this intriguing game.

Key

This zig-zag line means the room is split into two sections.

The arrows indicate the direction of the entrances and exits to the rooms.



WE welcome letters from readers giving their help with games on the Atari that they would like to pass on to other readers. The address to write to is:

Hints and Tips
Atari User
Europa House
Adlington Park
Adlington
Macclesfield SK10 4NP

Basil the Great Mouse Detective

AFTER recently completing this superb game from Gremlin Graphics I decided to compile a list of all the items you need to collect to complete the various levels.

Level one: Items:	The shops and docks Dagger, gun, cigar, flowers and key.
Level two: Items:	The sewers Bone, hat, card, tooth and fruit.
Level three: Items:	Ratigan's den Letters, padlock, candle, cigar and flowers.

– David Harris, Yateley, Camberley.

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ATU7



Its all in the mind . . .

ROBERT CREWE and ANDREW HOMER take a close electronic look at ESP

HAVE you ever wondered if you possess the wonderful and mysterious talent of Esp – extra sensory perception? If so, this program may well provide you with the answer. It's based on the now famous Zener test experiments carried out in America in the 1930s and also featured in the film Ghostbusters.

The experiments involved special Zener cards which are marked with rectangles, circles, stars, waves and crosses. A pack of 25 contains five of each symbol.

The object is to try and guess the symbols on the cards as they are dealt face down on a table. Probability dictates that out of 25 randomly dealt cards, five correct guesses could be put down to pure chance. Any more than this may involve Esp.

Of course, relatively low scores such as six or seven would have to be repeated many times to be significant. But very high scores, say between about 15 and 25, would be most unlikely to occur even once purely by chance – the odds are millions to one against.

So the higher the score the more the likelihood that you possess a high Esp rating. You too may be able to bend spoons like Yuri Geller and be a real nuisance to your mother.

The original 25 cards were found to be unsuitable for the computer versions. Although it proved fairly easy to shuffle that number by computer, in practice this led to serious problems. By simply keeping a mental note of the symbols used it was possible to influence the end results quite significantly.

For this reason the random number generator is used to select one of the five symbols each time a new card is displayed.

This way it is impossible to card-count and the chances of guessing correctly are always five to one. Therefore, over the 25 goes, pure chance should account for only five correct guesses.

The computer deals a randomly-selected card face down in the centre of the card table. You must then decide what you think the hidden symbol is.

The five symbols are displayed at the bottom of the screen as a reminder. Choices are made by typing in the appropriate number and pressing Return.

A graphics sequence reveals the hidden symbol and the results of the selections made. The cards are then shuffled ready for the next go.

The program can be used by one or two players. The two player option allows you to test your powers of Esp against a friend.

Sound is used throughout so if you find it a distraction turn down the volume on the TV. At the end of the test a score sheet is displayed on the screen together with a percentage Esp rating.

Remember, the higher the score and Esp rating the less the likelihood of pure chance being involved.

```
10 REM ******************************
20 REM *                            *
30 REM * EXTRA SENSORY PERCEPTION *
40 REM *             by             *
50 REM *   R.Crewe and A.Homer     *
60 REM *        (c)ATARI USER       *
70 REM *                            *
80 REM ******************************
90 DIM A$(1),B$(1),T$(1),CH$(1),CH1$(1
),NOP$(1)
100 POKE 731,1:POKE 752,1
110 GOTO 650
120 GOSUB 770
130 GOSUB 1020
140 C=0:SA=0:SB=0
150 REM MAIN LOOP
160 FOR Y=1 TO 25
170 GOSUB 1300
180 SETCOLOR 4,0,10:SETCOLOR 2,0,10:SE
TCOLOR 3,12,5
190 SETCOLOR 1,0,0:? #6;"▙"
200 REM USE [INV][CONTROL K],[SPACEBAR
] AND [CONTROL B] TO CREATE CARD TABLE
210 ? #6;"▙▙▙▙▙▙▙▙▙▙▙▙▙▙▙▙▙▙▙▙"
220 ? #6;"▙     ▙     ▙     ▙"
230 ? #6;"▙     ▙     ▙     ▙"
240 ? #6;"▙     ▙     ▙     ▙"
250 ? #6;"▙     ▙     ▙     ▙"
260 ? #6;"▙     ▙     ▙     ▙"
270 ? #6;"▙  a  ▙     ▙  b  ▙"
280 ? #6;"▙     ▙     ▙     ▙"
290 ? #6;"▙▙▙▙▙▙▙▙▙▙▙▙▙▙▙▙▙▙▙▙"
300 POSITION 9,4:? #6;"▘ ":REM [CONTROL
 L]
310 IF NOP$="1" THEN POSITION 15,7:? #
6;" "
320 IF B$="1" THEN T$=CHR$(6)
330 IF B$="2" THEN T$=CHR$(7)
340 IF B$="3" THEN T$=CHR$(8)
350 IF B$="4" THEN T$=CHR$(9)
360 IF B$="5" THEN T$=CHR$(10)
370 C=C+1
380 ? "1=";CHR$(6);"  2=";CHR$(7);"  3
=";CHR$(8);"  4=";CHR$(9);"  5=";CHR$(
10);"      ";"CARD No.";C
390 ? :? "PLAYER ■-ENTER CHOICE";:INPU
T CH$:? "▙":IF ASC(CH$)>53 OR ASC(CH$)
<49 THEN GOTO 380
400 FOR V=15 TO 0 STEP -1:SOUND 0,(ASC
(CH$))-20,10,V:FOR D=0 TO 8:NEXT D:NEX
T V:SOUND 0,0,0,0
410 IF CH$="1" THEN CH$=CHR$(6)
420 IF CH$="2" THEN CH$=CHR$(7)
430 IF CH$="3" THEN CH$=CHR$(8)
440 IF CH$="4" THEN CH$=CHR$(9)
450 IF CH$="5" THEN CH$=CHR$(10)
460 IF NOP$="1" THEN CH1$=" ":GOTO 560
470 ? "1=";CHR$(6);"  2=";CHR$(7);"  3
=";CHR$(8);"  4=";CHR$(9);"  5=";CHR$(
10);"      ";"CARD No.";C
480 ? :? "PLAYER ■-ENTER CHOICE";:INPU
T CH1$:IF ASC(CH1$)>53 OR ASC(CH1$)<49
```

Turn to Page 11 ►

◄ From Page 9

```
 THEN GOTO 470
490 ? "K"
500 FOR V=15 TO 0 STEP -1:SOUND 0,(ASC
(CH1$))-30,10,V:FOR D=0 TO 8:NEXT D:NE
XT V:SOUND 0,0,0,0
510 IF CH1$="1" THEN CH1$=CHR$(6)
520 IF CH1$="2" THEN CH1$=CHR$(7)
530 IF CH1$="3" THEN CH1$=CHR$(8)
540 IF CH1$="4" THEN CH1$=CHR$(9)
550 IF CH1$="5" THEN CH1$=CHR$(10)
560 FOR DEL=0 TO 300:NEXT DEL:FOR LUM=
0 TO 10:SETCOLOR 4,0,LUM:SETCOLOR 2,0,
LUM
570 SOUND 0,200-(LUM*14),10,10
580 POSITION 3,4:? #6;CH$:POSITION 9,4
:? #6;T$:POSITION 15,4:? #6;CH1$
590 FOR DEL=1 TO 50:NEXT DEL:NEXT LUM:
SOUND 0,0,0,0:FOR D=0 TO 300:NEXT D
600 IF CH$=T$ THEN SA=SA+1
610 IF CH1$=T$ THEN SB=SB+1
620 IF C=25 THEN GOTO 1180
630 NEXT Y
640 REM CREDITS + CHOICE OF 1 OR 2 PLA
YERS
650 GRAPHICS 1:SETCOLOR 4,7,7:SETCOLOR
 2,7,7:SETCOLOR 0,12,14:SETCOLOR 1,0,0
:POSITION 2,2:? #6;"Extra"
660 POSITION 4,4:? #6;"Sensory":POSITI
ON 6,6:? #6;"Perception"
670 POSITION 9,10:? #6;"by":POSITION 4
,12:? #6;"robert crewe":POSITION 9,14:
? #6;"and"
680 POSITION 4,16:? #6;"andrew homer":
FOR DEL=0 TO 500:NEXT DEL:? #6;"K"
690 GRAPHICS 2:SETCOLOR 1,0,14:SETCOLO
R 2,0,0:POKE 752,1
700 POSITION 1,3
710 ? #6;" please enter your   choice
of 1 or 2    players":INPUT NOP$:IF NO
P$<>"1" AND NOP$<>"2" THEN 690
720 IF A$="Y" THEN POKE 756,CHBAS+2:?
#6;"K":GOTO 130
730 ? "         PRESS START TO BEGIN"
740 C=PEEK(53279):IF C=6 THEN GOTO 120
750 IF C<>6 THEN GOTO 740
760 REM REDEFINE CHARACTER SET
770 RAMTOP=PEEK(106)
780 POKE 106,RAMTOP-4
790 GRAPHICS 2:SETCOLOR 2,0,0:POKE 752
,1
800 POSITION 3,4:? #6;"INITIALISING"
810 POSITION 5,6:? #6;"PLEASE WAIT"
820 CHBAS=RAMTOP-4
830 ADDR=CHBAS*256
840 FOR X=0 TO 1023
850 POKE ADDR+X,PEEK(57344+X)
860 NEXT X
870 CHAR=64
880 POS=ADDR+(CHAR*8)
890 FOR X=0 TO 7:READ A
900 POKE (POS+X),A:NEXT X
910 FOR CHAR=70 TO 76
920 POS=ADDR+(CHAR*8)
930 FOR X=0 TO 7:READ B
940 POKE (POS+X),B:NEXT X
950 NEXT CHAR
960 POKE 756,CHBAS+2:? #6;"K"
970 DATA 0,0,0,0,0,0,0,0
980 DATA 32,81,138,4,32,81,138,4,126,1
26,102,102,102,102,126,126,24,24,24,25
5,255,24,24,24
990 DATA 146,84,56,255,56,84,146,0,24,
36,66,66,66,36,24,0,255,255,255,255,25
5,255,255,255,0,60,102,12,24,0,24,0
1000 RETURN
1010 REM INTRO TITLE
1020 SETCOLOR 1,0,7:SETCOLOR 2,0,14:SE
TCOLOR 4,0,14
1030 REM USE CONTROL WITH Q,E,R,Z,C AN
D SHIFT WITH = TO DRAW DESIGN
1040 ? #6;" ┌──────────────┐"
1050 ? #6;" |┌────────────┐|"
1060 ? #6;" ||┌──────────┐||"
1070 ? #6;" |||┌────────┐|||"
1080 ? #6;" |||└──esp───||||"
1090 ? #6;" ||└─────────┘|||"
1100 ? #6;" |└───────────┘||"
1110 ? #6;" └────────────┘|"
1120 ? #6;" ──────────────┘"
1130 FOR C=0 TO 14:FOR L=14 TO 0 STEP
-1:SETCOLOR 1,C,L:SETCOLOR 2,C,14:SETC
OLOR 4,C,14
1140 SOUND 0,200-(L*14),10,10:SOUND 1,
200-(C*14),10,4
1150 NEXT L:NEXT C:SOUND 0,0,0,0:SOUND
 1,0,0,0:FOR D=0 TO 200:NEXT D
1160 ? #6;"K":RETURN
1170 REM FINAL SCORES
1180 ESPA=(SA-5)/20*100:IF SA<5 THEN E
SPA=0
1190 ESPB=(SB-5)/20*100:IF SB<5 THEN E
SPB=0
1200 GRAPHICS 1:SETCOLOR 2,7,7:SETCOLO
R 4,7,7:SETCOLOR 0,12,14:SETCOLOR 3,0,
14:SETCOLOR 1,0,0
1210 POSITION 2,2:? #6;"player a":POSI
TION 2,4:? #6;"score=";SA:POSITION 2,6
:? #6;"ESP rating ";ESPA;"%"
1220 IF NOP$="1" THEN GOTO 1240
1230 POSITION 2,10:? #6;"player b":POS
ITION 2,12:? #6;"score=";SB:POSITION 2
,14:? #6;"ESP rating ";ESPB;"%"
1240 ? "WANT TO TRY AGAIN(Y/N)";:INPUT
 A$
1250 IF A$<>"Y" AND A$<>"N" THEN GOTO
1180
1260 IF A$="N" THEN ? #6;"K":? #6;"I K
NEW":? #6;"YOU WOULD SAY THAT":FOR DEL
=1 TO 500:NEXT DEL:GRAPHICS 0:END
1270 IF A$="Y" THEN ? #6;"K":POSITION
2,8:? #6;"may the FORCE"
1280 POSITION 2,10:? #6;"be with you":
FOR DEL=1 TO 300:NEXT DEL:GOTO 690
1290 REM CARD SHUFFLING ROUTINE
1300 B$=STR$(INT(RND(0)*5+1))
1310 ? #6;"K"
1320 SETCOLOR 1,1,14:SETCOLOR 2,12,5:S
ETCOLOR 4,12,5
1330 FOR A=0 TO 30:POSITION 2,5:? #6;"
shuffling cards"
1340 RT=INT(RND(0)*19):DO=INT(RND(0)*9
):H=INT(RND(1)*5+6):POSITION RT,DO:? #
6;CHR$(H)
1350 NEXT A:RETURN
```

Get it right!

10 CP1 (Y)	460 8CY (T)	910 D3R (H)
20 CP2 (3)	470 4HU (8)	920 DPN (J)
30 CP3 (X)	480 JT3 (8)	930 DLS (Q)
40 CP4 (4)	490 DT8 (A)	940 DO5 (7)
50 CP5 (Y)	500 81M (O)	950 W59 (N)
60 CP6 (7)	510 RRT (9)	960 RVR (V)
70 CP7 (X)	520 RW4 (U)	970 45Y (7)
80 CP8 (8)	530 S1F (Y)	980 EJE (R)
90 JPY (G)	540 S5R (2)	990 9EH (N)
100 9S7 (O)	550 XEQ (A)	1000 VAK (H)
110 QY7 (H)	560 KJT (L)	1010 DON (P)
120 PGJ (3)	570 NFS (2)	1020 7QP (E)
130 PEJ (H)	580 6WV (A)	1030 D4N (C)
140 UUT (T)	590 5ND (Y)	1040 YX1 (2)
150 DGS (P)	600 FST (5)	1050 2DJ (Y)
160 TUU (2)	610 JMH (2)	1060 4QN (H)
170 PYJ (L)	620 JFQ (G)	1070 83Y (6)
180 7GD (X)	630 QU6 (3)	1080 MGJ (H)
190 X6T (4)	640 DCX (8)	1090 7QS (U)
200 CUT (9)	650 PT5 (M)	1100 3N9 (A)
210 4MY (9)	660 J9U (1)	1110 OPS (8)
220 CFO (9)	670 3HP (A)	1120 YX1 (O)
230 CKO (9)	680 RPO (2)	1130 5XJ (V)
240 CPO (A)	690 ADP (E)	1140 SX4 (A)
250 CTO (9)	700 X3Y (W)	1150 XUE (D)
260 CXO (C)	710 QTW (H)	1160 EVU (F)
270 MT8 (2)	720 VEH (X)	1170 DHN (9)
280 D6O (7)	730 676 (O)	1180 KDE (7)
290 5MY (3)	740 DRU (M)	1190 KGG (9)
300 S7J (S)	750 EEE (X)	1200 Q3E (C)
310 M1G (U)	760 DLY (N)	1210 25S (5)
320 K36 (5)	770 A8G (3)	1220 YTN (4)
330 K96 (U)	780 C37 (4)	1230 T9G (Q)
340 KG6 (7)	790 CH3 (S)	1240 J1P (2)
350 KN6 (U)	800 DUG (9)	1250 HDY (G)
360 KYX (Y)	810 8R3 (K)	1260 GYS (J)
370 DTX (8)	820 4OX (C)	1270 23Y (C)
380 4MT (T)	830 442 (C)	1280 VMN (8)
390 RT1 (W)	840 3YT (O)	1290 DRN (E)
400 E9W (Q)	850 TVM (8)	1300 UMC (Q)
410 QU3 (9)	860 R38 (8)	1310 T55 (6)
420 QYU (F)	870 QOE (Y)	1320 95E (K)
430 R4L (1)	880 EFM (T)	1330 Q94 (C)
440 R9C (N)	890 ECM (M)	1340 SJL (N)
450 RG9 (7)	900 CD5 (7)	1350 4VE (S)

PROGRAM BREAKDOWN

90 – 140	DIMension strings, zeroes variables and draw the title screen
160 – 640	Main loop
210 – 290	Draw card table
320 – 370	Allocate symbol to a random number
400 – 640	Get the player's inputs, compare them with the random symbols and increment the scores
770 – 1000	Redefine the character set to create the symbols
1020 – 1160	Draw the title graphics
1180 – 1270	Calculate the final scores and gives your Esp ratings before asking if you wish to play again
1290 – 1350	Generate a random symbol

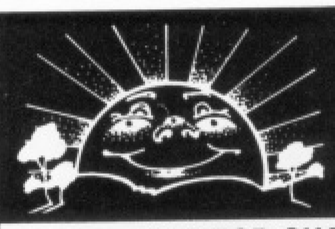
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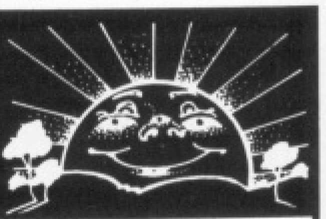
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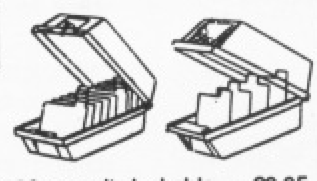
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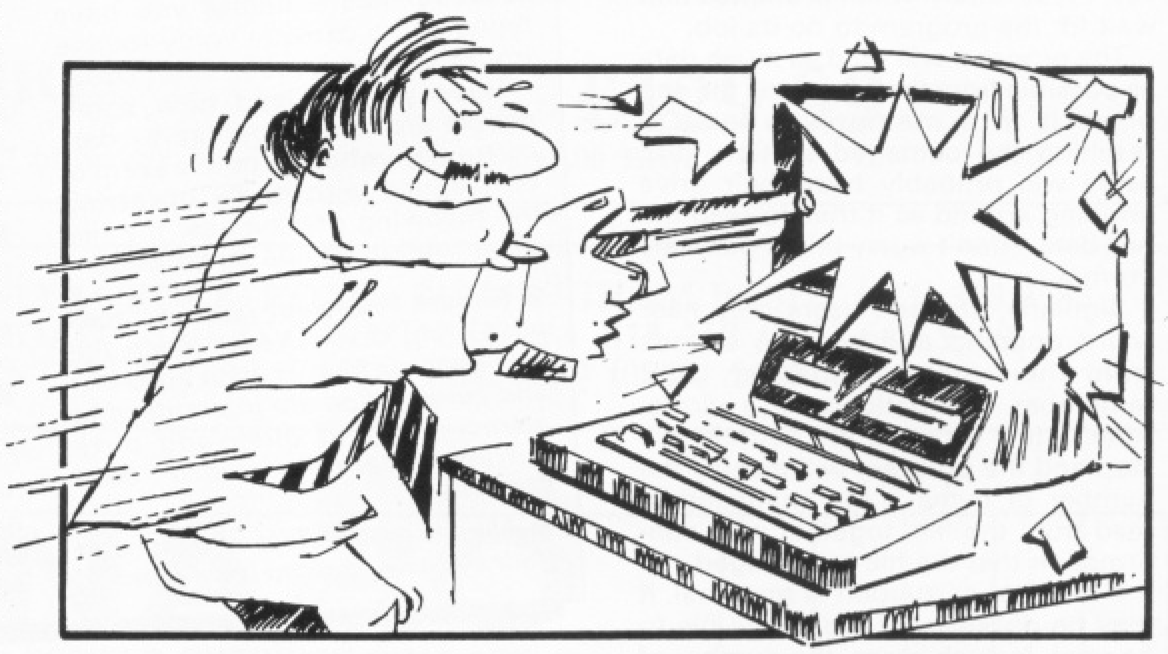
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Make a speedy recovery

MICK RANDLE gives you an all-singing, all-dancing routine for retrieving damaged files



ISN'T it strange how something as cool and calculating as a computer can provoke so many human emotions? There's the shoot-'em-up player's exhilaration in combat followed by his excitement of achieving a high score. Or the adventurer's concentration on a problem and his satisfaction in solving it.

Then there is the Basic programmer's determination to master the computer and his elation when his program works correctly.

But there's also the anger when his program subsequently fails to load, followed by abject despair when he remembers that he did not make a back-up copy. All manner of nasties seem to queue up to corrupt a program file saved on a magnetic medium.

After calming himself down the programmer considers what can be done to save the situation. If it was stored on cassette there's very little he can do except rewrite it from scratch.

If it was stored on disc he could dig out a utility program in an effort to reconstruct the damaged file. Even then he has less than a 50-50 chance of success.

That is where this utility – Recovery – allows him to salvage his Basic program file by recovering all data up to the damaged section and writing it out as a new Basic file.

Atari Basic permits you to save your programs in either text format or tokenised format – see the articles in the March, April and May issues of *Atari User*. The text format, which is also known as the list format, is invoked by the LIST "C:" or LIST "D:FILENAME" command, while the tokenised format is invoked by the CSAVE or SAVE"D:FILENAME" command.

Tokenised files are usually preferred since they are shorter and they load considerably faster than text files, but they do suffer from a disadvantage when it comes to data corruption.

When loading a program file, the operating system will abort the load process if it encounters corrupted data. If it was saved in text format all data up to the damaged section will be retained in memory, making the best of a bad situation.

However, if the file was tokenised all data will be lost. This has always struck me as being cruel, particularly when most cases of corruption occur at the very end of a five-minute cassette file.

The reason is that the first few bytes of a tokenised file contain pointers for the computer's operating system. These tell the computer to expect a file of a specified number of characters. Data corruption causes the load process to cease, which results in too few characters being loaded.

This confuses the computer which takes the easy way out and resets its pointers to their default values, ignoring the code that has just loaded. The end result is that you have absolutely nothing to show for those long hours you spent programming.

This utility will help to reduce the disaster to manageable proportions by reading a tokenised file into a memory buffer from disc or tape. It will stop reading at the damaged section and recreate the missing operating system pointers to account for the shorter file length.

It will then write the modified file to disc or tape. This new file can then be loaded back into memory in the normal way by using CLOAD or LOAD "D:FILENAME".

Unfortunately, it's not possible to read past a corrupted section, but it is a darned sight better than having to re-write the whole program from scratch.

Program I is the full utility listing and I have avoided the use of awkward-to-type control characters, except for the machine code string in line 180. Data statements are the alternative but they are exceedingly boring to enter and they delay program initialisation considerably, so I opted for the string.

If you don't feel up to typing line 180 you can enter Program II, which will create a disc or tape file in list format. After running the program, type NEW and read the line into memory by typing ENTER "C:" or ENTER"D:LINE180.LST".

Now list the line to the screen, just to be sure, then enter the rest of Program I.

Leave out the REMs if you wish and, as always, use Get It Right! to check your work – but remember that this will affect the cumulative checksum value. And don't forget to save a copy of the new program before running it.

The program is designed to be easy to operate by the most inexperienced and will work on all 8 bit Atari computers, although 16k machines may not have sufficient memory to recover long files.

On running the program, you are met with a message telling you how

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◀ *From Page 13*

much buffer space is available. You are then asked to tell the program whether your corrupted file is stored on cassette or disc. Enter C or D as appropriate without pressing the Return key.

If you respond with a D for disc, you are asked to enter the filename of the corrupted program. Use the Delete key to edit the filename if you mistype a letter and press Return when finished.

Disc users should ensure the correct disc is in drive one, and cassette users should place the correct tape in their program recorder then press the Play key. Press Return when prompted and wait for the program to do its job.

The program will read as much data as possible from the corrupted file and place it in a memory buffer. On reaching the damaged section, disc users will probably hear their drive grinding around as it tries to read the bad data – don't worry this is perfectly normal.

Similarly, cassette users may hear weird popping and beeping sounds from their monitor speaker. Just remember that patience is a virtue. After a few seconds the sounds will stop and the program will display the number of bytes it has managed to read from the file, together with confirmation that the file is damaged.

If the data corruption is marginal, it may be possible for the whole file to be read. In such cases, the number of bytes recovered will be displayed and the program will report that the file is intact.

Be careful if the number of bytes recovered is the same as the maximum possible file length – it will probably mean that the buffer is full and you have insufficient memory to read the rest of the file.

The utility will then calculate how many bytes are missing from the original file and rebuild Basic's pointers to correspond to the new shorter file.

Disc users are asked to enter a destination filename. You should not use the original disc, which must now be treated with suspicion because if one program was corrupted others may have suffered the same fate, and writing to the disc could possibly corrupt more files.

Cassette users should prepare their program recorder by installing a cassette and pressing Play and Record.

After pressing Return, the file will be re-saved to tape or disc. It can then be loaded in the normal way by CLOAD or LOAD"D:FILENAME".

Now you have the task of rewriting the missing part of the program.

Hints and tips

Data corruption has occurred when the data stored on the tape or disc is different to the data sent out by the computer. There are many causes, such as a dirty or physically damaged magnetic surface.

Disc users can minimise the risk by always writing with verify, during which the computer checks the data by reading it back from disc immediately after it has written to it.

Cassette users can only keep their fingers crossed, since Basic doesn't possess a verify routine for cassette files – unless you have typed in the cassette verify routine from the June issue of *Atari User*.

Have you noticed how some people are rarely troubled by data corruption, whereas others seem to be plagued with it? By observing the following precautions, the risk of corruption can be minimised.

- *Always keep your discs or tapes absolutely clean. Never touch the magnetic surface. Human body oils and perspiration are guaranteed to attract dirt and dust, and dirty surfaces cannot record data correctly.*
- *Always return discs and tapes to their boxes when you have finished with them to avoid the risk of airborne contamination.*
- *Keep your read/write head clean – and that doesn't mean get the scrubbing brush out. You can buy head-cleaning tapes and discs from your computer dealer.*
- *Try to keep data cables away from power cables. My recorder refused to save while a mains cable was near to its serial lead.*
- *Before using a new tape, always fast-wind it to the end, turn it over and fast-wind again. This evens out the tape tension which helps the recorder to maintain a constant speed and sometimes a troublesome tape will load afterwards.*
- *Use short C15 or C20 tapes and record only one program per side. Shorter tapes help to maintain speed stability.*
- *Try to use good quality tapes. I prefer TDK but less expensive tapes will do the job so long as you avoid the cheap and nasty types – you only get what you pay for.*
- *If you still have problems with your program recorder, have the head alignment checked by your local dealer. This is a common cause of cassette problems but special equipment is required to adjust them correctly.*

Sometimes the data corruption occurs very near the beginning of a file, which does not give you much to work on. In such cases you may just as well re-write the program from scratch.

If the file will not even begin to load then I am afraid that it must be considered a write-off. In practice most corruption seems to occur near the end of very long cassette files, so you should not have too much work to do.

This utility is not a miracle cure, but it is certainly a powerful weapon against the load/save gremlins and a valuable addition to the Basic programmer's toolbox.

```
1 REM RECOVERY PROGRAM
2 REM By MICK RANDLE
3 REM (c)ATARI USER
4 REM Recover a tokenised Basic file
5 REM from a damaged tape or disC
6 REM  INITIALISE SYSTEM 
100 POKE 82,2:POKE 83,39:GRAPHICS 0
110 POKE 16,112:POKE 53774,112:REM Dis
able Break key
120 POKE 709,10:POKE 710,2:POKE 712,10
:POKE 752,1:REM Set colours and disabl
e cursor
130 POKE 702,64:POKE 694,0:REM Force u
pper-case non-inverse keyboard input
140 OPEN #2,4,0,"K:"
150 DIM TYPE$(4),IN$(12),FILE$(14),IOC
B1$(45)
160 POSITION 0,0:? "        BASIC TOKENISE
D PROGRAM RECOVERY       "
170 POSITION 0,1:? "                      
                        "
180 IOCB1$="[illegible]":REM machine code
190 BUFFER=200+PEEK(14)+PEEK(15)*256:B
YTES=FRE(0)-200
197 REM
198 REM  ESTABLISH SOURCE 
199 REM
200 ? :? "FILE LENGTH LIMIT IS ";BYTES
;" BYTES"
210 ? :? :? "DISC OR CASSETTE FILE (D
or C)";CHR$(27);CHR$(31)
220 POSITION 34,7:GOSUB 2000
230 IN$=CHR$(KEY)
240 ? CHR$(27);IN$
250 IF IN$<>"C" AND IN$<>"D" THEN ? CH
R$(253):GOTO 220:REM Not C or D
```

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```
260 IF IN$="C" THEN FILE$=IN$:TYPE$="T
APE":GOTO 300
270 TYPE$="DISK"
280 ? :? :? "SOURCE DISC FILENAME D1:-
----------"
290 POSITION 26,10:GOSUB 1000:FILE$="D
:":FILE$(3)=IN$:REM Get disc filename
297 REM
298 REM  READ FILE INTO RAM BUFFER
299 REM
300 ? :? :? "PREPARE SOURCE ";TYPE$;
310 ? " & PRESS RETURN ";:GOSUB 2000:?
 " "
320 TRAP 5000:POKE 764,0:OPEN #1,4,128
,FILE$:TRAP 44444
330 ? CHR$(28);CHR$(156);"READING SOUR
CE FILE"
340 X=USR(ADR(IOCB1$),BUFFER,BYTES):CL
OSE #1
350 BYTES=PEEK(856)+PEEK(857)*256
360 IF BYTES<129 THEN 5000
370 ? CHR$(28);CHR$(156);BYTES;" BYTES
 RECOVERED - FILE ";
380 IF X=3 OR X=136 THEN ? "INTACT":GO
TO 500
390 ? "DAMAGED"
397 REM
398 REM  MODIFY BASIC POINTERS
399 REM
400 LINE=PEEK(BUFFER+8)-242+PEEK(BUFFE
R+9)*256
410 LINOFF=PEEK(BUFFER+LINE+2)
420 IF LINE+LINOFF<BYTES THEN LINE=LIN
E+LINOFF:GOTO 410
430 POKE BUFFER+LINE,0:POKE BUFFER+LIN
E+1,128:POKE BUFFER+LINE+2,3
440 BYTES=LINE+3
450 OLD=PEEK(BUFFER+12)-242+PEEK(BUFFE
R+13)*256
460 LET NEW=OLD+242-(OLD-BYTES)
470 HI=INT(NEW/256):LO=NEW-HI*256:POKE
 BUFFER+12,LO:POKE BUFFER+13,HI
480 LET NEW=NEW-3:HI=INT(NEW/256):LO=N
EW-HI*256
490 POKE BUFFER+10,LO:POKE BUFFER+11,H
I
497 REM
498 REM  PREPARE FOR FILE OUTPUT
499 REM
500 IF TYPE$="TAPE" THEN 550
510 WRITE=1
520 ? :? :? "NEW DISC FILENAME D1:----
--------    "
530 POSITION 23,16:GOSUB 1000
540 FILE$="D:":FILE$(3)=IN$
550 ? :? :? "PREPARE DESTIN ";TYPE$;
560 ? " & PRESS RETURN ";
570 GOSUB 2000:? " "
597 REM
598 REM  WRITE NEW FILE
599 REM
600 POKE 764,0:TRAP 5000:OPEN #1,8,128
,FILE$:TRAP 44444
610 ? CHR$(28);CHR$(156);"WRITING NEW
";TYPE$;" FILE"
620 X=USR(ADR(IOCB1$),BUFFER,BYTES):CL
OSE #1
697 REM
698 REM  END MESSAGE
699 REM
700 ? CHR$(28);CHR$(156);"RECOVERY COM
PLETE"
710 ? :? :? "PRESS RETURN TO CONTINUE
";
720 GOSUB 2000:RUN
997 REM
998 REM  INPUT DISK FILENAME
999 REM
1000 IN$="":CNT=1:COL=PEEK(85)-1:ROW=P
EEK(84)
1010 POSITION CNT+COL,ROW:GOSUB 2000
1020 IF KEY=155 THEN ? " ":RETURN :REM
 Return Key
1030 IF KEY=126 THEN 1060:REM Delete
1040 IF CNT=13 THEN ? CHR$(253):GOTO 1
010:REM Too many characters
1050 ? CHR$(27);CHR$(KEY);:IN$(CNT,CNT
)=CHR$(KEY):CNT=CNT+1:GOTO 1010
1060 CNT=CNT-1:IF CNT<1 THEN CNT=1:IN$
="":? CHR$(253):GOTO 1010
1070 IN$=IN$(1,CNT):IF CNT<12 THEN ? "
-":GOTO 1010
1080 ? " ":GOTO 1010
1997 REM
1998 REM  KEYBOARD INPUT ROUTINE
1999 REM
2000 POKE 764,255:FOR Q=0 TO 15:? "?";
CHR$(30);
2010 KEY=PEEK(764):IF KEY<>255 THEN 20
40
2020 NEXT Q:FOR Q=0 TO 15
2030 KEY=PEEK(764):IF KEY=255 THEN ? "
 ?";CHR$(30);:NEXT Q:GOTO 2000
2040 IF Q<>16 THEN POP :REM Properly t
erminate the For-Next loop on abnormal
 exit
2050 IF KEY=154 OR KEY=60 OR KEY=188 O
R KEY=39 THEN 2000:REM Control-3, Caps
, Control+Caps, Inverse video
2060 GET #2,KEY:RETURN
4997 REM
4998 REM  ERROR TRAP ROUTINE
4999 REM
5000 PRINT CHR$(28);CHR$(156);CHR$(253
);
5010 ? "CANNOT OPEN FILE - RETURN TO G
O ON ";
5020 CLOSE #1:GOSUB 2000
5030 IF WRITE THEN GOTO 500
5040 RUN
```

Program to create line 180 for you

```
1 REM Program II
2 REM By MICK RANDLE
3 REM (c)ATARI USER
4 REM Create line 180 in program 1
5 REM and LIST it to disc or tape
6 REM  INITIALISE THE CODE
100 GRAPHICS 0:? :? "PROCESSING":?
110 DIM TYPE$(4),FILE$(13),IOCB1$(45)
120 TYPE$="TAPE":FILE$="C:"
130 FOR Q=794 TO 830 STEP 3
140 IF CHR$(PEEK(Q))="D" THEN TYPE$="D
ISC":FILE$="D:LINE180.LST"
150 NEXT Q
160 FOR Q=1 TO 45
170 READ DATA
180 IOCB1$(Q,Q)=CHR$(DATA)
190 NEXT Q
197 REM
198 REM  WAIT FOR USER INPUT
199 REM
200 ? "PREPARE A ";TYPE$
210 ? "PRESS RETURN KEY TO WRITE LINE
180"
220 POKE 764,255
230 IF PEEK(764)=255 THEN 230
297 REM
298 REM  WRITE FILE
299 REM
300 CLOSE #1:POKE 764,0
310 OPEN #1,8,0,FILE$
320 PRINT #1;"180 IOCB1$=";CHR$(34);IO
CB1$;CHR$(34)
330 CLOSE #1
340 ? :? "ACTION COMPLETE"
2997 REM
2998 REM  MACHINE-CODE
2999 REM
3000 DATA 162,16,104,189,74,3,201,4
3010 DATA 208,4,169,7,208,2,169,11
3020 DATA 157,66,3,104,157,69,3,104
3030 DATA 157,68,3,104,157,73,3,104
3040 DATA 157,72,3,32,86,228,132,212
3050 DATA 169,0,133,213,96
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM	LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
1	CAJ (W)	199	EJS (N)	340	K7D (C)	490	77T (E)	697	EEX (2)	1997	EUN (R)
2	CAK (3)	200	1JC (T)	350	QXQ (N)	497	EEV (3)	698	EGX (E)	1998	EVN (S)
3	CAL (V)	210	9SF (F)	360	RUP (6)	498	EGV (F)	699	EJX (2)	1999	EWN (R)
4	CAM (4)	220	SF5 (H)	370	HJU (3)	499	EJV (3)	700	MF5 (L)	2000	CD7 (E)
5	CAN (W)	230	WF6 (X)	380	H26 (P)	500	PT8 (V)	710	K9T (V)	2010	9WO (E)
6	CAP (7)	240	TXM (5)	390	XDD (2)	510	QD6 (4)	720	2JR (Y)	2020	75T (Q)
100	OUW (2)	250	U8R (Q)	397	EEU (C)	520	RWY (P)	997	EF1 (V)	2030	22T (F)
110	Q9E (2)	260	VKK (6)	398	EGU (1)	530	RW4 (W)	998	EH1 (V)	2040	LUX (9)
120	5AP (M)	270	UFO (X)	399	EJU (C)	540	PG7 (U)	999	EK1 (V)	2050	SO4 (6)
130	RXU (V)	280	Q1C (W)	400	SDV (H)	550	8E5 (J)	1000	M9S (U)	2060	A3R (E)
140	58C (G)	290	9GT (R)	410	1D3 (E)	560	CT8 (W)	1010	8V7 (1)	4997	EUR (8)
150	RV9 (J)	297	EET (H)	420	QL6 (O)	570	XMU (3)	1020	6QX (F)	4998	EVR (D)
160	TJR (V)	298	EGT (U)	430	2H8 (N)	597	EEW (D)	1030	WAD (O)	4999	EWR (8)
170	JQ7 (F)	299	EJT (H)	440	WH3 (N)	598	EGW (O)	1040	TDC (7)	5000	11Y (C)
180	LJK (A)	300	6M5 (3)	450	S5N (S)	599	EJW (D)	1050	649 (R)	5010	WGW (F)
190	9VQ (X)	310	D1M (P)	460	X8C (M)	600	4ES (J)	1060	LH3 (O)	5020	AUU (E)
197	EES (N)	320	1XL (8)	470	HNM (X)	610	5OK (S)	1070	692 (S)	5030	RT2 (1)
198	EGS (W)	330	K8W (T)	480	2K3 (V)	620	JYG (F)	1080	37A (R)	5040	DFN (X)

Make every word count...

LEN GOLDING gives you a superb utility to cut out the chore of totting up all your word processor files

COUNTING words in an article or short story is about as stimulating as counting sheep, and has been known to produce similar results. Unfortunately, most editors insist on at least an approximate word count and if you're paid by the word, you'll have a healthy interest in the figure yourself.

Most of the latest generation word processors contain a rudimentary word count facilty, but many of the earlier ones, including Atariwriter – do not.

Moreover, if you're setting type or planning page layouts without the aid of a desktop publishing system, you'll often need some indication of word lengths and total number of characters to be printed. In these circumstances a simple total words figure isn't much use.

This program is designed to take the drudgery out of word counting and to give you facilities which are not available in most commercial word processors.

It analyses the text to show how frequently words of a particular length occur and gives a total letter count, as well as the total number of words you have used.

Although it was designed particularly for Atariwriter, it can also analyse any text file saved in Ascii format, so it will work with most word processors such as Mini Office II.

Also, text sent down telephone lines via a modem or other communications device is usually transmitted in Ascii format, so you can use this program to analyse the received data.

It's extremely easy to use. You simply Run the program, enter the name of the file you want to check, insert the disc containing that file, press Return and stand back.

The chosen file is OPENed by Basic, a USR statement then calls the machine code routine which handles all the analysis at about one thousand words per second.

This routine starts by loading the entire file into memory, at an address just above the Basic program. If any fault occurs during this process you will hear a beep from the TV speaker and the routine will hand control straight back to Basic.

If all is well, the routine will begin to read the text – if an error occurs the routine will simply prompt you to re-enter the filename again.

It skips over any initial formatting commands, end-of-line characters and blank spaces until it finds the start of the text itself. This is defined as the first character whose Ascii code is above 64 – it is usually an upper-case letter.

It then works its way through the text, incrementing the counter whenever it reaches the end of a word. Three things can mark a word end – a space, carriage return (Ascii 155) or an embedded printer code. None of these are counted as part of the word. If several end-of-word characters occur together – such as a string of spaces or carriage returns – only the one immediately following a word will trigger the counter, the rest will be ignored.

When it reaches the end-of-file, the routine hands control back to Basic which then closes the I/O channel, performs various calculations and prints the results on screen.

There are a few poimts worth noting

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```
10 REM TEXT ANALYSER FOR ATARIWRITER O
R ASCII-FORMAT TEXT FILES.
11 REM BY LEN GOLDING
12 REM (c)ATARI USER
20 DIM A$(27),B$(14),C$(12),D$(1):X=0:
RESTORE 250
30 FOR X=0 TO 216:READ D:POKE 1536+X,D
:NEXT X
40 GRAPHICS 0:START=PEEK(144)+256*PEEK
(145)
50 CLOSE #1:? CHR$(125):? :? "Name of
file to be checked?"
60 INPUT C$:B$="D:":B$(LEN(B$)+1)=C$
70 TRAP 240:OPEN #1,4,0,B$:X=USR(1536,
START)
80 LTRCOUNT=PEEK(1766)+256*PEEK(1767)
90 WRDCOUNT=PEEK(1790)+256*PEEK(1791)
100 CHRCOUNT=LTRCOUNT+WRDCOUNT-1
110 POKE 82,6:? CHR$(125);" FILE NAME:
 ";C$:?
120 FOR X=1 TO 11
130 WRDS=PEEK(1766+X*2)+256*PEEK(1767+
X*2)
140 ? X;"-letter words","= ";WRDS
150 NEXT X
160 POSITION 6,12:? "Over 10 letters
":?
170 ? :? "TOTAL LETTER COUNT = ";LTRCO
UNT
180 ? :? "BLOCK CHARACTER COUNT = ";CH
RCOUNT
190 ? :? "TOTAL WORD COUNT = ";WRDCOUN
T
200 POKE 82,2
210 ? :? :? "Want to check another fil
e (Y/N)";
220 INPUT D$:IF D$="Y" THEN GOTO 50
230 END
240 ? :? "File not found":GOTO 50
250 DATA 162,16,169,7,141,82,3,104,104
,141,85,3,133,204,104,141,84,3,133,203
260 DATA 169,255,141,88,3,141,89,3,32,
86,228,16,14,192,136,240,10,140,251,6
270 DATA 169,158,141,252,2,208,91,162,
25,169,0,157,230,6,202,16,250,133,206,
133
280 DATA 205,168,177,203,201,155,240,4
,201,65,176,7,32,194,6,176,61,144,239,
177
290 DATA 203,201,155,208,11,32,142,6,3
2,194,6,144,242,76,138,6,201,32,240,24
1
300 DATA 176,26,201,27,208,8,32,142,6,
32,194,6,176,24,32,142,6,32,194,6
310 DATA 176,16,177,203,201,65,144,245
,166,205,208,2,230,205,230,206,208,206
,32,142
320 DATA 6,96,165,206,240,47,201,11,14
4,2,169,11,10,170,254,230,6,208,3,254
330 DATA 231,6,173,230,6,24,101,206,14
1,230,6,173,231,6,105,0,141,231,6,238
340 DATA 254,6,208,3,238,255,6,169,0,1
33,205,133,206,96,206,88,3,208,8,173
350 DATA 89,3,240,11,206,89,3,230,203,
208,2,230,204,24,96,56,96
```

10 CP1 (Y)	120 TCM (U)	250 TFA (6)
11 CT1 (O)	130 DCO (U)	260 QTA (8)
12 CX1 (X)	140 82P (3)	270 VO4 (E)
20 LEL (L)	150 QY1 (C)	280 VFE (E)
30 VQV (D)	160 SW9 (7)	290 TLW (Y)
40 MF2 (2)	170 M6L (1)	300 GK5 (P)
50 L7K (R)	180 MKD (9)	310 6CU (C)
60 44A (U)	190 FJF (W)	320 PWA (Q)
70 GDH (7)	200 RNO (J)	330 Q8Y (A)
80 793 (9)	210 8DF (S)	340 QCK (9)
90 7GM (Q)	220 WLT (E)	350 25W (E)
100 6CQ (6)	230 DF2 (S)	
110 PK2 (F)	240 2C7 (X)	

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about the program's operation. It starts counting from the first character whose Ascii code is over 64. This means that if, for any reason, your text starts with a character lower down in the Ascii table, that character will be ignored.

The routine will skip over embedded printer commands, no matter how long or short and whether or not they are separated by spaces from the surrounding text. However, if one occurs in the middle of a word it will effectively split that word into two and count them separately.

This could happen if you need to change character sets – say to produce an accented é in the middle of a word – but you can avoid this problem by inserting your printer codes just before and after the word. Subscript or superscript characters will always be counted separately from the word they are tagged on to.

Once the routine has started counting, numbers and inverse characters – other than those used in embedded printer codes – will be treated as normal text. Symbols also qualify and are all counted as three-letter words as in:

C&A 10% $15 *X* @88

Punctuation marks are treated as letters. In the sentence:

Try it – it's easy!

the isolated hyphen will count as a one-letter word, and *easy!* counts as five letters. On the other hand:

Manic-depressive

counts as a single 16-letter word.

Headers and footers are handled differently depending on the text file format. With AtariWriter files, any words contained in headers or footers are counted only once. In Ascii format, they are counted again for every page on which they occur.

With long text files the word lengths will average out, so a total word count will give a fairly good indication of how many pages the printed text will take up. But with very short pieces – a character count is likely to prove more useful. This program gives the total letter count, ignoring spaces between words, and a block character count which includes the spaces but assumes that the text is all one paragraph.

This is no more than a rough guide to actual type-setting space, since allowance must obviously be made for the start and end of paragraphs, different space widths if your text is right-justified and different character widths if you're working with a proportional system. However, it does give a better approximation than a word count alone.

The text analysis can also give you a very rough indication of the reading level required for the piece. A story or article with few words above five letters is likely to suit non-fluent readers.

Popular articles and fiction will normally be biased heavily towards words of eight letters or less. If you have a high preponderance of 10-plus words – like preponderance – the text will be difficult to read and even worse to understand.

You might get away with it in a technical or professional journal, but there's no way you'll sell it to an editor of a popular magazine.

Help is only a letter away

by Rouloc



LOTS of letters to catch up with on account of the fact that I've been holidaying at the South Pole for the last four weeks. I just love getting a nice ice tan (pure white) – it doesn't half put the wind up Orcs when they see my deathly pale mug looming towards them out of the mist.

I met a couple of explorers while I was there – you should have seen their faces when they saw my flag – two brass lamps rampant on a field of oil – fluttering from the top of my luxury, fur-lined igloo.

They were even more aghast when they heard: "Who's a pretty boy, then?" emanating from the beak of a rather fat penguin that I had befriended and taught to speak. Laugh – I thought I'd burst in a puff of purple smoke!

So without more ado, let's catch up on the backlog of mail and deal with your latest raves, requests and responses. Special mention first of two heroes, M. Rew and M. Kenny from Enfield. These two adventurers have supplied me with much detailed and helpful information on Alternate Reality: The Dungeon. Well done, dynamic duo – you are hereby Rouloc's most admired personalities of the month.

Grateful thanks also to Douglas Sharpe of Burgess Hill for his tips on Leather Goddesses of Phobos, and all other readers who have kindly taken the trouble to write in with tips for a variety of adventures. Space prevents my thanking you all individually and from publishing every tip received – but keep up the good work.

An old Scott Adams adventure, Pyramid of Doom, is causing Jeff Henson of Leicester a little difficulty. He keeps getting torn to bits by the iron statue of the Pharoah in the throne room, and eaten alive by the purple worm in the portal. What a life!

A more modern adventure is also giving Jeff some grief – he wishes to know how to deal with the evil presence in the translucent rooms in Infocom's superb Enchanter. The answers to these problems are at hand.

Patrick Niemeijer from Holland has furnished his list of cherished adventures and role playing games. See how your own favourites match against it.

Patrick explains that adventures such as Stationfall and Guild of Thieves are missing from his list because they are very difficult to obtain in Holland.

Mark Powell of 21 Hillyfield, Bell Lane, Lewes, East Sussex BN7 1LA kindly offers *Atari User* readers help with any of the following adventures: Hollywood Hijinx, HHGG, Price of Magik, Red Moon, Lords of Time, Golden Baton, Mystery Funhouse, Pyramid of Doom and Voodoo Castle. Don't forget an SAE when you write.

Mark reckons the Eden Transport System (ETS) in Worm In Paradise to be mind-boggling. Even after studying the hint sheet, he is none the wiser. He thinks it a shame that the ETS is so unnecessarily complex, as the game itself is brilliant. Is there a simple way to go where you want, he asks. Can any of our readers help him?

The opaque cases in Guild of Thieves are proving obstacles to Calvin Leighton from Sherwood. For Calvin and other stumped would-be Guild members, see this month's tips.

Michael Snow of Bracknell is wrestling with Quest for Eternity but doesn't know how to fix the spaceship – can anyone help? I suspect that this is Michael's first adventure, if so, I suggest you try something a little more friendly, Michael, like Lords of Time or Dungeon Adventure. Quest for Eternity is rather hard and inflexible and I would not recommend it to a beginner.

The same goes for Alex Yeo of Bude. He's playing Cloak of Death, another tough and old fashioned breed of adventure. Alex is trying to get into the haunted bedroom, but without success. Does anyone know how?

He has some help for Sam Ingram of Wolverton – *Atari User*, April – with Quest for Eternity: To get the computers to work, type ENTER ASP on the terminal. Thanks for that, Alex, perhaps you can now help Michael Snow with his problem.

Ron Rainbird from Holmes Chapel, Cheshire, isn't terribly impressed with the ending to The Pawn. Up until the

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PATRICK NIEMEIJER's 15 FAVOURITES

Adventures:

1. Hitch Hiker's
2. Enchanter
3. Dallas Quest
4. Deadline
5. Jewels of Darkness
6. The Pawn
7. Zork I
8. Silicon Dreams
9. Mordon's Quest
10. The Incredible Hulk

Role-playing games:

1. Alternate Reality I and II
2. Ultima IV
3. Temple of Apshai trilogy
4. Ultima III
5. Return of Heracles

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business with the blue key he was enjoying the game, but when he found among other things that you could only use the key once and that there were too many red herrings, he mentally placed it on his "forget it" list. "What was the object of the whole game"? Ron asks. Good question.

I'm apt to agree – The Pawn doesn't really hang together as a cohesive story, and the puzzles are a bit arbitrary. But the good news for Ron is that Guild of Thieves, The Pawn's successor follows a far more logical line and is altogether a much, more satisfying adventure.

Incidentally, Ron has already made it to the final dungeon in SSI's Wizard's Crown but is unable to solve the maze on the second level. Any suggestions?

Pressure on space means my promised tips on Ultima will, I'm afraid, have to wait a while – rotten old Rouloc seems to love teaching his readers that patience is a virtue for adventurers!

That's all for this month. Exciting adventuring!

HINTS AND TIPS

Enchanter

● *Need help in the translucent rooms?*

Use the pencil and eraser to trap the evil presence. There is more than one solution but the following will work: Start at room M. Connect P and F. Connect M and P. Erase M and V. Erase P and F. Now go to room P and collect the powerful scroll.

● *Winding stair going on forever?*

It's an illusion. Dispel it with the Kulcad spell but watch your step!

Pyramid of Doom

● *Iron Statue tearing you to pieces?*

In the throne room, throw rope, go rope, then throw ruby.

● *Purple worm a pain?*

Don't hang around too long – purple worms are dangerous! Make sure you search the dead explorer and the pile of rubbish in the prison cell.

Guild of Thieves

● *Want to open the opaque case?*

Roll a five on all the dice. Didn't you notice that the pattern of rooms resembles the five spot side on a die? Shades of Tarzan and the frog answer in Mordon's Quest! Put the dice in the respective coloured slots and the case will open.

Leather Goddesses of Phobos

● *Require the headlight?*

In the bedroom in Cleveland, cut up the sheet, tie the pieces together, tie the resulting rope to the bed, throw it – the rope – out of the window and get Tiffany/Trent to climb down it.

● *Angling for 82 degrees?*

Put the un-tangling cream in the T-remover and see what you get. Use the product on the special angle.

Discs from Q to A

Peter Davidson asks the questions. Steve Evans, business development manager of Micro-stat, has the answers

Q What is the difference between a single and double sided disc, and can I use a single sided one as double sided?

A *All manufacturers aim to produce double sided, double density discs and the discs are then tested to see which category they should be sold as.*

Obviously, double sided discs can be used as single sided, but often a single sided disc will work in a double sided drive.

Business users who need reliability should use high quality double sided discs, but home users will probably have no problems using single sided discs in a double sided drive.

Q What is the difference between single and double density and which should I get for for general use?

A *Again if all discs were of the highest quality possible the density would be 96tpi – sometimes known as quad density.*

During certification they are given the appropriate labels and as with the single/double sided question, using the cheaper discs (in this case 48tpi) usually works on most drives.

Q What does the term tpi that you keep using mean?

A *Tpi stands for tracks per inch and is the number of tracks that were put on and read from the disc as it was made.*

The most common sort of disc is a double sided 48 tpi disc, usually known as a double sided double density disc.

Q Some discs are thicker than others. Do thick discs have any advantage over thin ones?

A *There is an IBM standard that determines everything about the disc, including thickness. Volume production houses and some companies attempt to save money by using thinner PVC for the sleeve.*

This accounts for the variation, but if you buy a good, branded disc you should have no problems.

Q Is it OK to cut a notch and new timing hole on the other side of the disc and flip it over in a single sided drive?

A *Discs designed to be flipped over are now available and there is no harm in using these or normal discs with extra notches cut in the correct places. There are stories that it is bad for the disc to rotate backwards in its sleeve, but this is only true of discs with cheap sleeves.*

Q Is there any advantage in having a disc that is welded all the way round rather than just sealed in spots?

A *Floppy discs are often bent slightly as they are put into the drive. So it could be said that the spot welded ones are better because they allow more flexibility. It all depends what point the advertiser wants to put over.*

Q Is a hub ring necessary or is it just a gimmick that advertisers use to make us buy their discs?

A *They are necessary on some makes of drive but not those usually used on the Atari 8 bit. However, if you regularly use discs with hub rings in your drive you may find that ones without will slip.*

Q Are all discs made of the same material?

A *Most discs are made by sticking ferric oxide to the actual discs using a mylar base. High density discs for the IBM PC/AT and clones use cobalt and a slightly different mylar base giving them a "cobbled coating".*

Q What is the difference between soft and hard sectored discs, and can either type be used on my Atari computer?

A *Both types are completely different and not interchangable. All modern discs are soft sectored which means that the sectors are recognised by software rather than by physical attributes of the disc.*

Q Occasionally I have had discs that stick in their sleeves. What causes this and how do I avoid it?

A *High pressure round the edge of a disc can crimp the disc into the sleeve. Do not put too many discs into a box or subject them to pressure in any other form.*

Q What does formatting do to a disc?

A *Formatting "draws" the tracks and sectors on to the magnetic surface of the disc and also puts other information that the disc operating system needs on to it.*

Q What does the term Clipping Level mean?

A *I liken this to dropping a ball – it will only rise part of the way back to where it was dropped.*

When a disc is made a signal is put on to it and the level of this signal is 100 per cent. The level that can be read back is called the clipping level.

On bulk discs (used by software houses for disc duplication) this level is usually around 40 per cent, while for a qood quality disc the figure is 50 per cent.

Disc drives respond to levels of 20 per cent and lower, so there is quite a large margin.

Q What advice would you give to someone purchasing a disc?

A *Business users need high reliability and should therefore buy discs that are certified for the use that they intend to put them to.*

Home users are more concerned about the price, and providing back-ups are kept, reliability is not so important.

A reasonably priced single density disc will probably work even as an 80 track double sided disc and even if you have to reject some, they will work out a lot cheaper than double sided, double density ones.

The best way is to buy one of a particular make and see how well it performs for your applications.

RETURN OF T

NEIL FAWCETT takes a look at Atari's re-release of some classic arcade games

IN the January 1988 issue of *Atari User* I looked back at some golden oldies from years gone by. At the time of the article the new Atari XE Games System was already on sale and there was a distinct possibility that some of these old favourites would re-emerge on to the software market.

However, Atari had different views on this subject and has re-released on rom cartridge five classic games formerly available on disc and



Archon: The Light and the Dark

You are about to enter the ultimate battle in the Universe – the struggle between the powers of light and darkness. The fate of the world rests in your hands.

This is a futuristic version of chess fought over two battlegrounds – strategy and combat screens. The first is divided into squares like a chess board, with you and your opponent taking turns to move your pieces – legions of mythical and legendary creatures.

The combat screen is an enlargement of a strategy square occupied by one of your pieces and one of the enemy's. This is a one-on-one battle zone where opponents fight for their lives.

The aim of each side is to control five power points or to annihilate the opposition. Pieces can move in one of three ways – on the ground, in the air or by teleporting. A useful tip is to remember that your creature will fight better on a square of its own colour – however, some squares change colour throughout the game.

You have control of 18 pieces in your regiment, each having its own characteristics and fighting skills. This leaves room for a lot of thought and timing to be employed during the game. To stand a chance of winning a conflict you will have to learn the individual abilities of each piece.

Each side is controlled by a powerful magician – Wizard on one and Sorceress on the other – representing good and evil respectively. Each can cast spells to affect the game – teleport, heal, shift time and many more.

Archon is ideal for players of strategy games who want just a little bit more for their money. Just try it and see.

Rescue on Fractulus!

The Earth forces are at war with the evil Jaggies who have seized control of Fractulus, the most inhospitable planet this side of the Kalamar system. Up in space the brave Ethercorp pilots have been holding their own, but down on the planet's surface things are looking a little desperate.

The Jaggies have built defensive gun emplacements all over the craggy mountain tops and canyons and kamikaze saucers constantly buzz the whole area. If this isn't bad enough the atmosphere is pure cyanitric acid – and will burn through your spacesuit in minutes.

However, there's always some good news. You have been given the newly modified Valkyrie Class Fighter equipped with a Dirac Mirror Shield, Etheric Navigation System – a computer-enhanced viewscreen which allows you to see through the acid atmosphere – and the AMB torpedo which will destroy a target if it hits anywhere near it.

This is the best sci-fi shoot-'em-up crossed with a hint of flight simulator I have played – you can tell it's of Lucasfilm Game design by its all-round brilliance.



It's got everything: Wonderful graphics, superb sound effects and even an alien nasty that hammers on your cockpit until it breaks and you burn to death. If you like a nice title screen on a game take a look at this one – it's stunning.

The game starts with you in your fighter looking forward at the launch tube of the Mothership, which is positioned above the planet. As you launch, the tunnel zooms towards you at high speed until you are ejected under computer control to descend through the yellow acid atmosphere and into battle.

Now the fun begins. Manual control is returned to you and you must fly your V-wing fighter just like a real plane – forward on the joystick to descend and back to climb. Right and left bank you in the relevant direction. Pressing fire will launch one of your AMB torpedoes, of which you seem to have an ample supply.

In addition to the joystick controls you must learn some keyboard options. For those of you who have an XE Console without the keyboard you can use the function keys. If you are using a computer like the 130XE you have a choice of these or the actual keyboard. All the controls and much more are explained in the excellent manual that you receive with the game.

Fractulus is totally addictive and caters for the real games players among you. If you do get it have fun, but above all: Get those spacers off the planet – fast.

THE ROMS...

cassette. They are Blue Max, Rescue on Fractulus, Ballblazer, Archon and Fight Night.

In an attempt to support the 8 bit market, Atari has priced the roms at £14.99 – I remember when a Star Raiders cartridge cost £30 – which is affordable by the average man in the street.

The packaging for each is beautifully presented with full colour artwork and also included is an easy-to-read Game Manual detailing the scenario in full.

A point to bear in mind is that it is very difficult to damage a rom cartridge. Providing you don't plug it in while the computer is still switched on, you will have a very happy medium for program storage that will last for a very long time.

Fight Night



This game helped to fill a gap that had for a long time been ignored – boxing simulations. Written by Accolade last year, it offers you the chance to create a boxer and then enter into competition with other fighters.

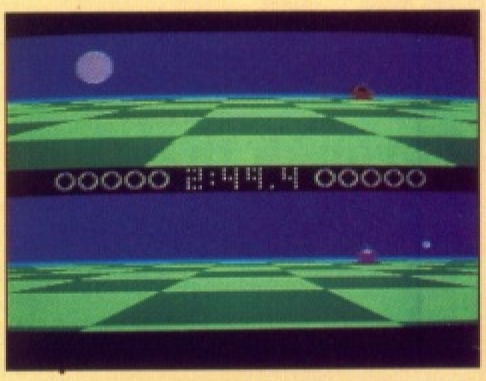
You have five different modes of play – construction, main event, sparring, training and tournament.

You control your boxer using the joystick and have the choice of eight different moves – guard up or down, fake or throw a punch and more.

In the construction mode you can create up to 24 boxers by selecting from a range of heads, bodies, feet and shorts – rather like Frankenstein did – with the exception of the shorts, that is. The game offers well animated graphics and adequate sound effects.

It also has its amusing moments, especially when your opponent throws one of his special punches – which can be anything from spinning around to sock you one or bopping you one on the top of your head.

Fight Night is an amusing and entertaining sports simulation that will give hours of fun.



Ballblazer

It is the year 3097 and you are about to become a contestant in the newest and fastest cult sports game in the Universe. This is your chance to become the ultimate champion.

Strapped into your Rotofoil, a hovercraft like vehicle capable of speeds of up to 50 metres a second, you must gain control of the Plasmorb and shoot it through your opponent's goal.

The game uses a split-screen similar to the one used in Speed Ace by Zeppelin which shows a simultaneous first-person perspective for each player. Once the game gets going the sheer speed is awesome.

There are three play modes: Regulation game, practice mode and spectator mode. A game lasts for three minutes and offers the ultimate in two player, head-to-head competition.

A very original game that offers a challenge to both your nerve and speed of reactions. Yet another programming delight from Lucasfilm Games.

Blue Max

Originally released by Broderbund software in 1983, the game is based around the flying exploits of Max Chatsworth, a World War I fighter ace. You control Max – using a joystick – in his fighter-bomber biplane as he seeks revenge for the annihilation of his squadron.

Your mission is to shoot down aircraft, bomb ground installations and penetrate the enemy city. Once there you must bomb the three red or blue flashing targets and land on the next runway to complete the game. Don't worry if you miss a target – you can land and prepare for another assault.

The main play area scrolls diagonally from right to left. This, coupled with the shadow of your aircraft, gives an illusion of depth to the screen. Enemy planes constantly buzz you and added to this hazard are anti-aircraft gun emplacements which fill the sky with a hail of flak – survival isn't very easy.

Your biplane is very manoeuvrable, allowing you to adjust your altitude at any time. This means you can shoot enemy aircraft at any level or reduce your height to between 21 and 25 feet for air-to-ground strafing runs. Be very careful when doing this – if you drop below 19 feet it's kaboom!

Unlike most shoot-'em-up games, you only have one life. However, your plane can survive hits by enemy fire or flak a number of times before it crashes.

A status line at the bottom of the



screen reports the plane's condition. For example, F indicates that you have a fuel leak and G means that your machine gun is damaged and will only fire intermittently.

Blue Max is a fun game to play and is very addictive. I played it first time around and now it's available on rom I can .recommend it to everyone.

MUG THE INDEPENDENT MicroLink User Group NEWSLETTER

Through the Gateway

Gateways are connections to other computers. MicroLink has a number of these, to British, European and American databases, and one which has come in for a bit of publicity recently is the USA-based Mnematics Videotex service.

This offers similar features to MicroLink, but as it's mostly used by American subscribers it is intriguingly different in style.

But the number of MicroLink subscribers using the gateway has made an impact. The UK SIG (Special Interest Group) has passed a message on to MUG commenting on this, and asking us for our ideas and reactions to the service.

They also have online parties; a number of subscribers get on line at the same time and use the Mnematics CHAT facility to discuss anything that seems worth talking about.

So if you've ever fostered a secret ambition to invade America, this might be just the way to do it.

Linkup

Most MicroLink members – even the active ones who regularly chat, mail and use the Bulletin Board (BB) – only know their fellow MicroLinkers as names and numbers. And most subscribers have questions and suggestions about the service, judging from the enthusiastic discussions on features and performance that pepper the BB.

So how about meetings, where users can get together in convivial surroundings and perhaps get to buttonhole a MicroLink official specially imported for the occasion? That's the idea behind the Linkups.

So far, volunteers have said they'll organise Linkups in Manchester, Birmingham and London. As everything is being sorted out on the BB, dates, times and venues are extremely flexible; as things become more definite they'll be published in Mugshot. And if the Linkups are as successful as they should be, they could well turn into regular events.

For the latest details on Linkups, mail MAG95816 or check on the board.

Umbrella organisation

Starting a small business is encouraged these days, but anyone going it alone for the first time soon discovers a huge range of problems – bureaucratic, financial and practical – which can sap the energy of even the keenest start-up.

ExpertLink is a new service aimed at both new and established businesses. Run along the lines of the bulletin board, it provides access to two teams of experts, one based at the University College of Swansea and the other based just about everywhere.

The first group consists of professors and lecturers with qualifications in a wide range of subjects from law to ergonomics. The second has an even wider base of experience – the MicroLink subscribers themselves. Many of these run small (and not so small) businesses, and have solved the problems themselves.

Subscribers can either post a question for public discussion or send it for confidential consideration by the UCS team. And anyone can volunteer answers, or pass on a useful contact name, or even offer a service themselves.

Quick!

Your tortoise is on fire. What do you do? This month has seen some more unusual bulletin board entries, some of which could conceivably solve your problem.

For owners of incandescent reptiles, either the Tortoise Trust (MAG36331) which has been offering advice and leaflets on the care of the beasts or the Merseyside Fire Museum (MAG-100518), which consists of keen fire engine enthusiasts, might sort things out.

Other ideas currently under discussion on the board are chess games via Email, a poetry corner, and genealogy with computers. Someone's even trying to sell their latest music album; while MicroLink has made nobody a rock star yet there's always the first time.

More mundane matters managed to get sorted out, like how to send mail to New Zealand or how to download software to an IBM PC. It just goes to show; all you have to do is ask.

Shots in the dark

This page of news has to be prepared weeks in advance of publication – an inherent problem with such archaic technology as ink and paper.

Things change fast on MicroLink. So a weekly MicroLink User Group newsletter is published on the system itself. This can reflect what's happening faster, as well as dealing with individual problems, provoking discussions (hopefully!) and giving updates on new features.

It's called Mugshot. Written by Rupert Goodwins (MAG95816) it's posted on the Bulletin Board (>BB) in the MUG category late on Sunday evening each week.

It's also sent via MicroLink/Telecom Gold electronic mail to a list of people who would rather get a copy mailed to them than use the BB. This also means that Telecom Gold users who aren't MicroLink subscribers can see what they're missing. Again, contact MAG95816 if you fall into the latter category.

Getting carried away

...is one of the reasons the Cambridge Computer Z88 has been so popular. A number of MicroLink subscribers either have one or are interested in the beast. And in the tradition started by Brian Vallot-Lewis' (MAG11357) Archimedes User Group, a Z88 group has started up on MicroLink.

This one's organised by Vance Burton. Everybody in the group keeps a list of all the other members, and the Email system makes it easy for anyone to send a request for help or a new discovery to everyone else.

And if nobody in the group can solve a particular problem, then as soon as Cambridge Computer comes up with the answer it can be distributed to everyone.

The Archimedes group has been doing great things since its inception. Discounts for members on a range of commercial software have been arranged, and contact made with several suppliers. It must also be the only nationwide discussion forum which is entirely free from commercial considerations; the only people making the news are the users themselves.

Suggestions of material for inclusion in the MUG Newsletter should be sent to Rupert Goodwins on MAG95816

Lodesagold

Product: Lode Runner
Price: £19.99 (Cartridge)
Supplier: Software Express, 514-516 Alum Rock Road, Birmingham.
Tel: 021-328 3585

MANY years ago when I first got my Atari 800 and 810 disc drive I bought a game from America called Lode Runner. At the time it was a disc-only game, and I used to make my tape deck-owning friends go green with envy every time I played it.

For me it is one of Broderbund's greatest games and now it has been released on rom cartridge everybody can play it.

The storyline involves your exploits as a highly trained Galactic Commando charged with returning a vast hoard of gold stolen by the power-hungry leaders of the repressive Bungeling Empire.

You have just discovered the enemy's secret subterranean catacombs and you must make your way into them and recover the gold. It is stored in several locations ranging from the pockets of the guards who chase you to lying on the floor or buried in the walls.

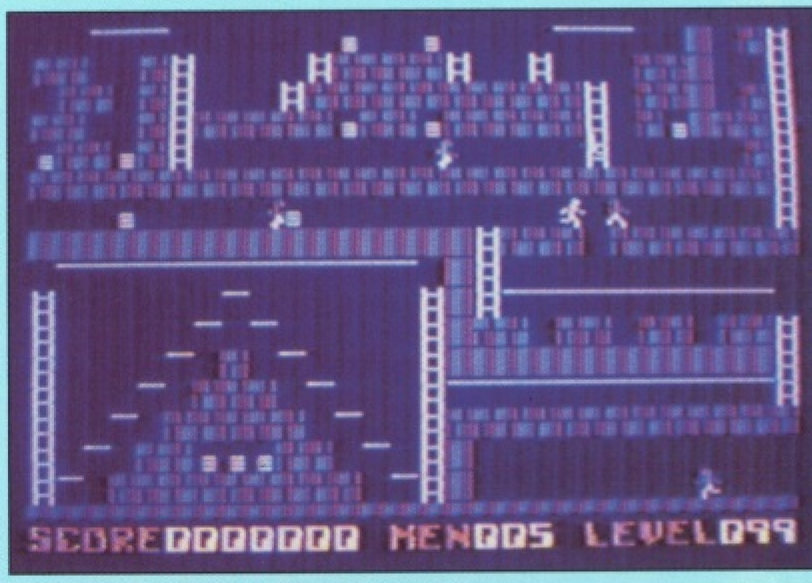
You will have to dig your way into the walls to get at it – but be careful, it's very easy to entomb yourself.

You have been equipped with a laser drill pistol that allows you to dig holes in the floor in which to trap the guards.

When they fall in they drop any gold they are carrying, allowing you to collect it. But be very careful, if you fall down your own hole they'll get you or cover you with earth.

Once you have collected all the gold from a particular level you will hear a short tune and a ladder will appear leading to the top of the screen. Climb up it to the next level.

The best part of the game is that you can create your own screens. This means the only restriction to the playability is your own imagination – the more you keep designing the longer the game goes on. If you want to keep your newly-created levels you must have a disc drive attached containing a blank, newly formatted disc.



Take care – it's easy to get entombed

Even if you don't fancy designing your own screens the 150 levels which the game features will keep you occupied for a very long time. The packaging says there are only 75 but someone has miscounted.

Your lode runner can be controlled by a joystick in port one or by the keyboard. I found the latter offers more control when you're in a tight situation. To change this option press Control+L at any time.

When you start the game you are given five lives but if you press Control+F it will increment this number to a maximum of 255 which is more than enough.

You can also alter the speed of the game by pressing the cursor left or right keys.

Control+A will sacrifice a life if you are trapped, Control+D will toggle which direction your drill works when you press fire and Control+R will end a current game. If you press Control+U it will advance you one game level.

The handiest feature can be accessed at the main title screen by pressing Select. This will move you into the Play Level select option where you can move the joystick up or down to play any of the 150 screens.

The graphics and sound effects are average and the game's strength lies in its playability. Never have I been as addicted to a game as I was with Lode Runner.

Addictiveness, playability and the option to design your own screens make it a winner in my books. If you like a challenge buy Lode Runner, you won't be disappointed.

Ray Sharp



Watch out for the meanie in the middle

Sound	*5*
Graphics	*7*
Playability	*10*
Value for money	*9*
Overall	*8*

Software Scene

Tasteless trivia

Product: Cops 'n' Robbbers
Price: £1.99 tape
Supplier: Atlantis Software Limited, 28 Station Road, London SE25 5AG.
Tel: 01-771 8642

IN Cops 'n' Robbers from Atlantis you play the part of the infamous jewel thief Fingers Lonegan who is about to break into the Acme Diamond Company and steal all the uncut diamonds which are lying around.

There is also an abundant supply in the mine, which is rumoured to be haunted by ghosts.

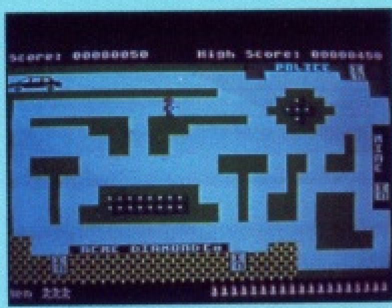
Your problems start when you set off a burglar alarm which brings the police on to the scene and they are now combing the area looking for you.

You have a .45 Magnum and a limited supply of bullets with which to shoot the police as you make your way through the buildings.

Now shooting policemen is not my idea of a good thing to teach children to do. Aliens from a distant planet OK but not your neighbourhood bobby.

However back to the game. After you have collected the diamonds you have to take them back to your getaway car.

Your perspective of the game shows a plan view of the mine and buildings with a side view of your man which unfortunately makes



the game look very childish.

The graphics are pathetic and the sound effects dismal. The game is playable but not for long.

It appears to have been thrown together quickly to get it on to the market. Sadly for the author and the company involved, it's a disaster.

Ray Sharp



Sound	2
Graphics	2
Playability	3
Value for money	0
Overall	2

Ghosts and ghoulies

Product: Spooky Castle
Price: £1.99 tape
Supplier: Atlantis Software Limited, 28 Station Road, London SE25 5AG.
Tel:01-771 8642

OVER the years the heroes of many games have had stupid names. But in Spooky Castle from Atlantis I feel they have gone too far. How do you fancy being called Gormless Gary?

Now for the story. The beautiful Princess Clare has been abducted and imprisoned by demonic ghosts deep within a castle.

Rather unwisely King Michael has offered her hand, and only her hand, in marriage to the person who finds and brings her back.

The local village idiot – that's you – decides to undertake this hazardous mission. So you journey through the castle trying to



avoid rabid bats which drain your energy and the deadly ghosts.

One thing not mentioned on the cassette inlay is that you can fall off the battlements if you get your jump wrong. There were times when I thought I had got it right, but still died. A bug in the program?

But don't worry too much, there is always something to help you. Potions and crosses which give you extra energy and lives are scattered around.

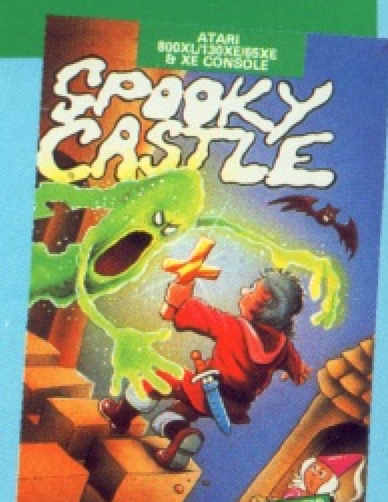
The 17 rooms that you visit are locked and each contains the keys that will allow you to leave them. You start with five lives – and you'll need every one.

Even though this is a budget game I found myself wondering if it was really worth the price. The graphics are below average and the sound effects are, to be honest, boring.

However, the main problem is that it is so difficult to play. Instead of getting steadily harder as the game progresses this one starts by being difficult and rapidly becomes impossible.

I like a game that challenges my gamesmanship, but I soon tired of this one.

It is another platform game in the same mould as Ghost Chaser but not as good. The ridiculous timing often required annoyed me, and I'm sure there could have been a better title design than just a Graphics 0 screen with writing on it.



So, the mascocists among you may spend your £1.99 on it – but don't blame me if you end up in a padded cell through sheer frustration.

Pete Wheeler

Sound	5
Graphics	6
Playability	4
Value for money	2
Overall	4

Gem of an adventure

Program: Jinxter
Price: £19.95
Supplier: Rainbird, 1st Floor, 74 New Oxford Street, London WC1A 1PS.
Tel: 01-379 5683

THIS is your lucky day. Just when you might have begun to think the supply of good Atari adventures had all but dried up, along comes Rainbird with a magnificent offering.

Jinxter sets you loose in a puzzle-filled universe where your luck is all that stands between your success and failure.

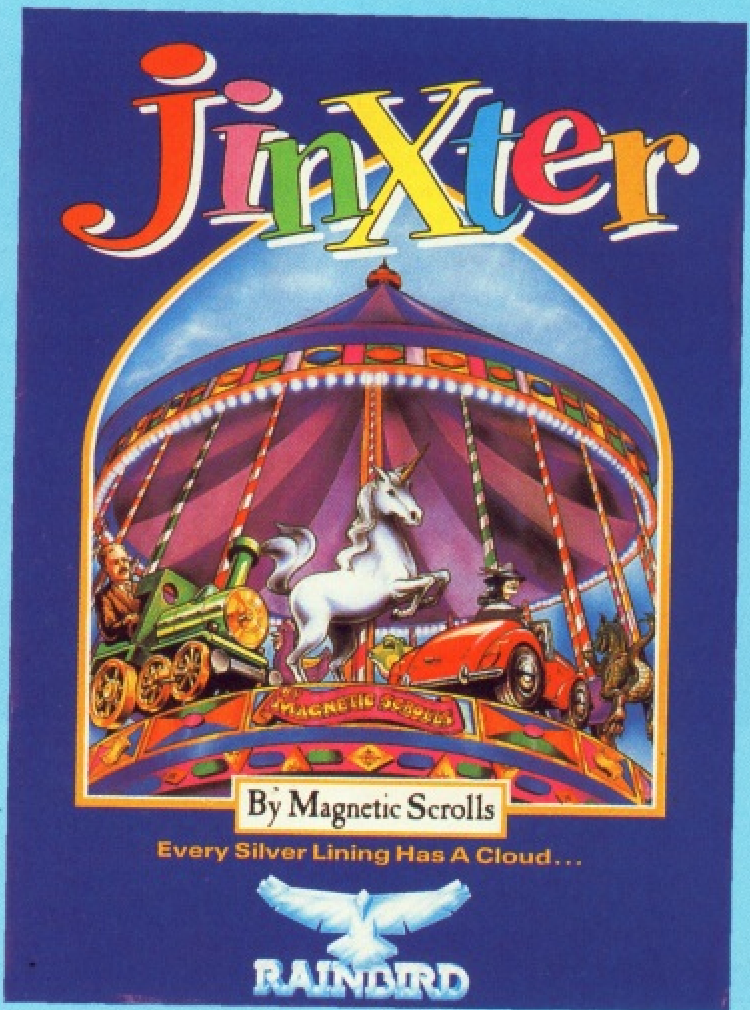
The nasty green magicians have snaffled a magical charm bracelet, dismantled it and scattered the lucky pieces around the country. Your job is to recover them and save civilisation.

You'll have some help if you get into any fixes. A Guardian From Beyond The Realms Of Time is never far away but he's not at all what you might think.

Imagine a morose Arthur Daley who has little else but cheese sandwiches on his mind, wears a herringbone overcoat, and uses such literary expressions as "wossname", "narmean" and "doodah" and you'll have some idea of this sullen but very funny character.

As Jinxter has been written by Michael Bywater of Punch and the Magnetic Scroll's team – the latter responsible for the award winning Guild of Thieves and The Pawn – you might expect it to be imaginative and funny. And it is – very.

The adventure comes on two discs and features full-screen size, attractive black and white graphics of several of the locations. These pictures can be scrolled up and down at will – they simply overlay the text – by use of the Start and



Select keys.

The game is expansive – far too big to be crammed into the Atari's memory all at once – and so makes frequent accesses to the disc. This naturally retards progress somewhat, but you can speed things up considerably by switching off the graphics.

You begin on a bus and, depending on how you handle the ticket inspector and where you decide to get off, you should soon find yourself at Never Ending Lane.

At this point the Guardian should put in his first appearance. He will pop up from time to time, particularly when you are in difficulty.

In fact, an unusual feature of this adventure is that you can't get killed. Well, there is just a teeny exception to that rule but I'll let you discover it for yourself.

Whenever you're in danger of shuffling off this mortal coil, up pops the Guardian either with some timely advice or to haul you out of your tribulation.

But beware, every time he assists in this way or you put a foot wrong, you'll use up a bit of your luck – and you'll need it all for the denouement.

Magic features prominently in Jinxter. Every charm you find has its own magical ability, and the spell/charm names are like nothing you've seen before in an adventure.

Watchercallit, Doofer, Oojimy, Thingy and Doodah are the names of the charms, and those are the words that you'll have to use to work your magic.

There are lots of imaginative puzzles and stimulating sequences in Jinxter. In particular, you'll enjoy solving the riddle of the bakery where you won't be allowed to leave until you've baked a decent loaf of bread.

The game is packed with wit and humour and has the most richly detailed and fulsome prose seen on your Atari.

The command parser is a delight to use and the vocabulary seems huge – having a response for almost everything in the game.

The usual ability to save and load a game state are included – and you're certainly going to need them to complete the epic with full marks.

The program is handsomely boxed and comes with an adventure reference card, a copy of the the Independent Guardian – which contains, among other things, a host of coded clues, a staff memo and a beer mat advertising Old Moose Bolter ale.

Jinxter is a hoot from beginning to end and is the best adventure for the Atari since Guild of Thieves.

Rainbird and Magnetic Scrolls are clearly the tops when it comes to adventures for your 8 bit Atari, and Jinxter confirms their deservedly high reputation.

This one has hit written all over it. Buy it without a moment's delay – this really is your lucky day!

Bob Chappell

Presentation	*9*
Atmosphere	*9*
Puzzlement	*10*
Value for money	*9*
Overall	*9*

FORT APOCALYPSE

by Bryan Stevens



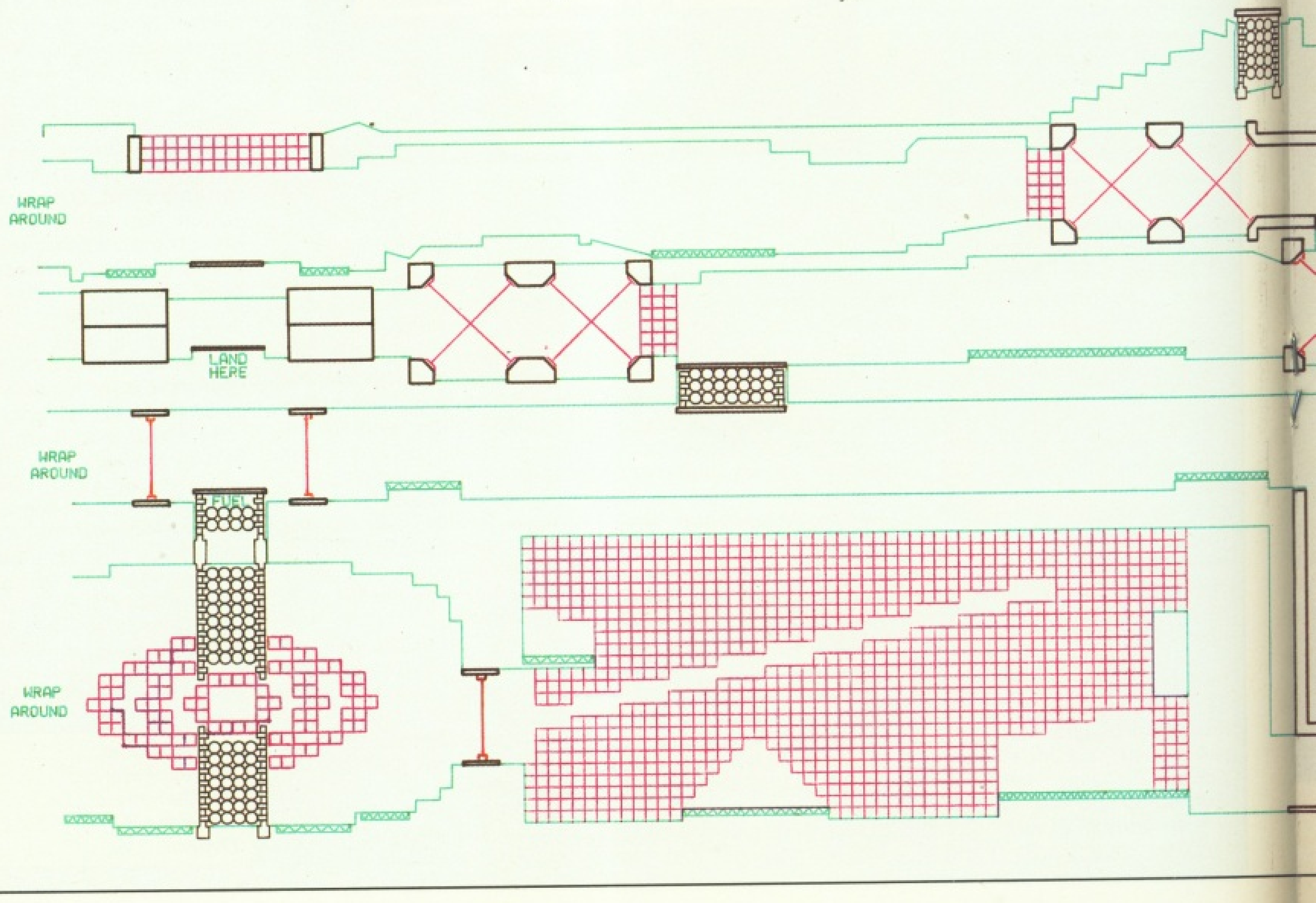
KEY

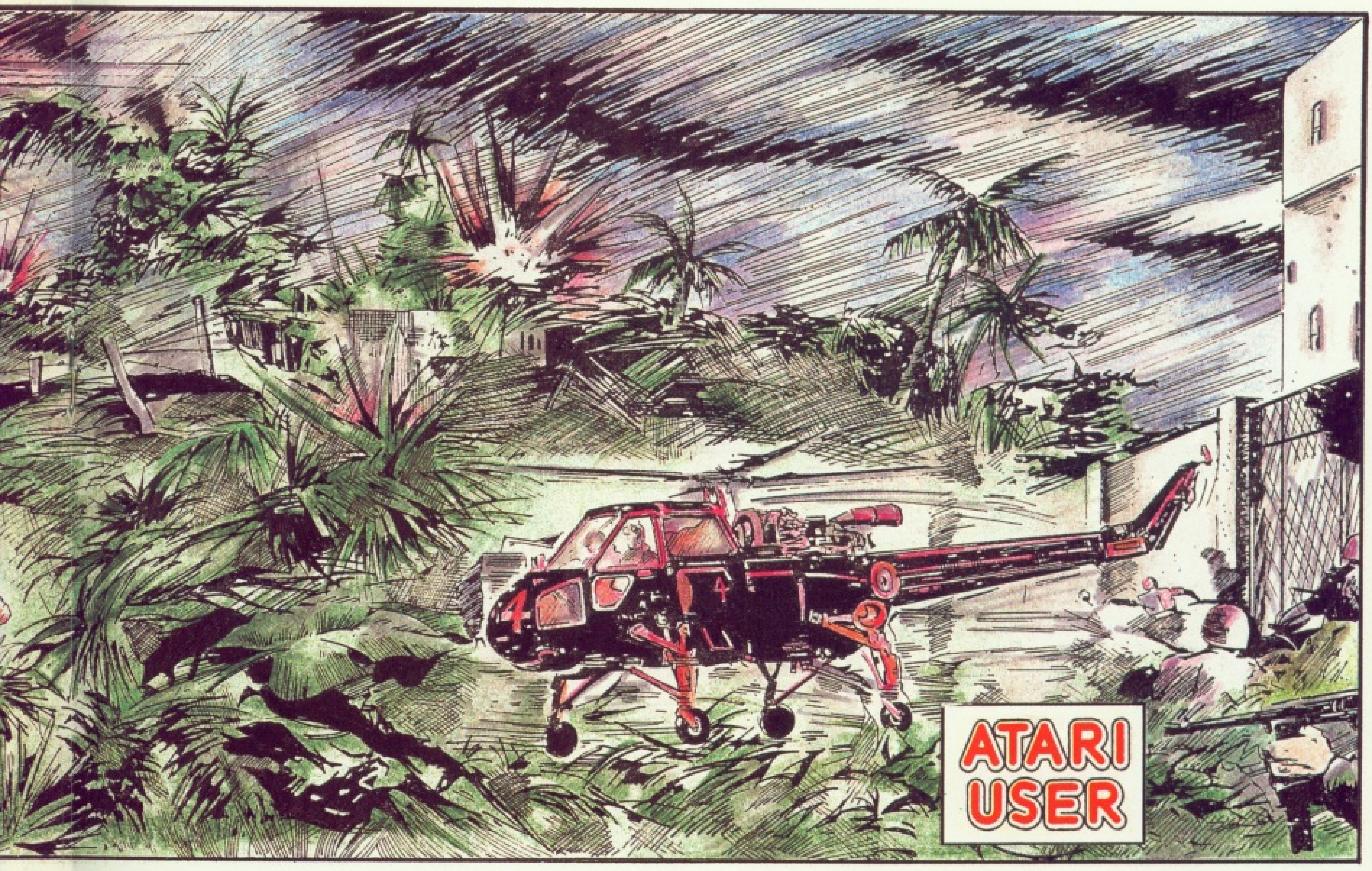
Rescue platform

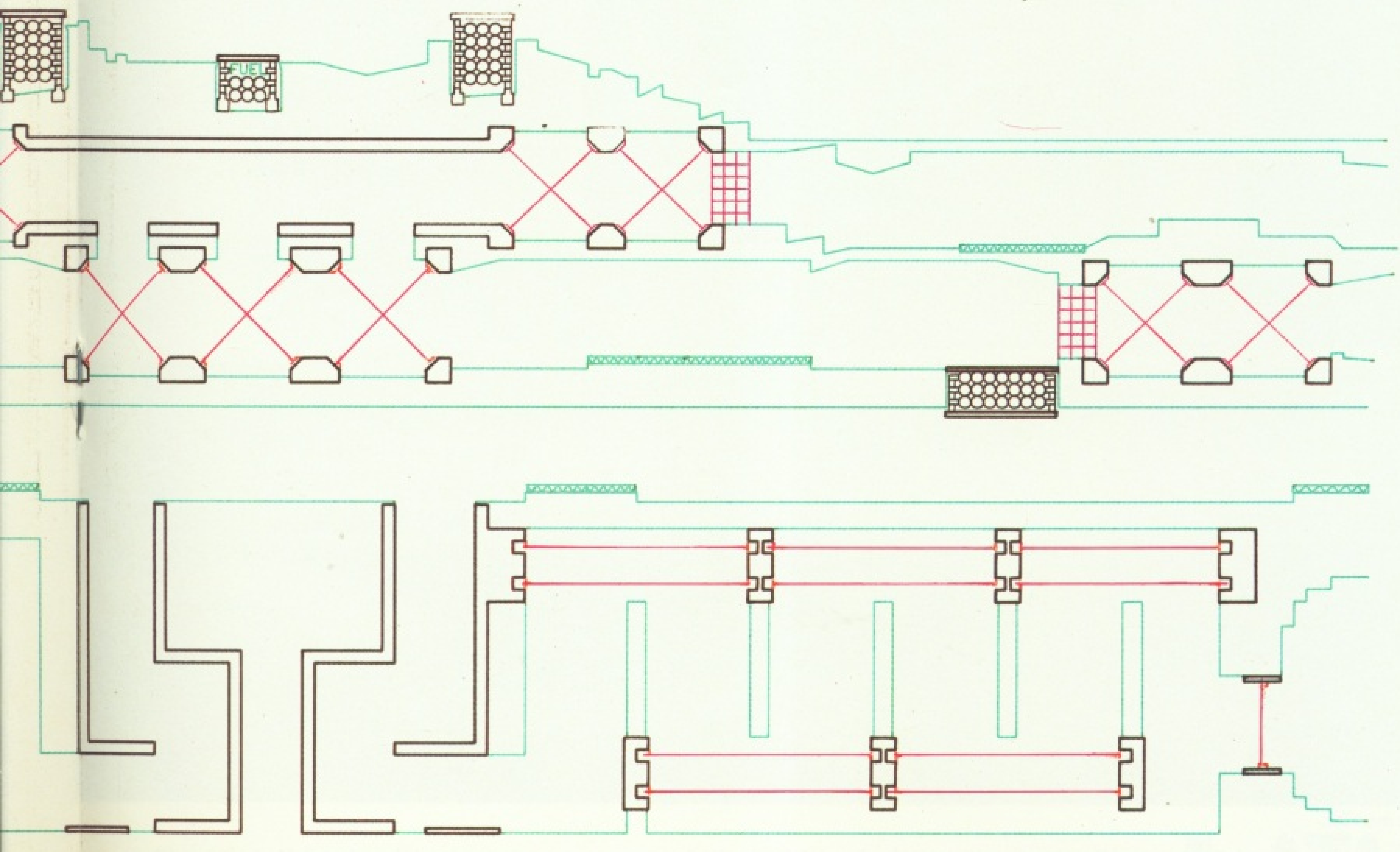
"Shootable" blocks: Shoot or bomb these to progress into lower levels to resuce men.

Transporter: Randomly transports you to another.

Lasers




ATARI
USER

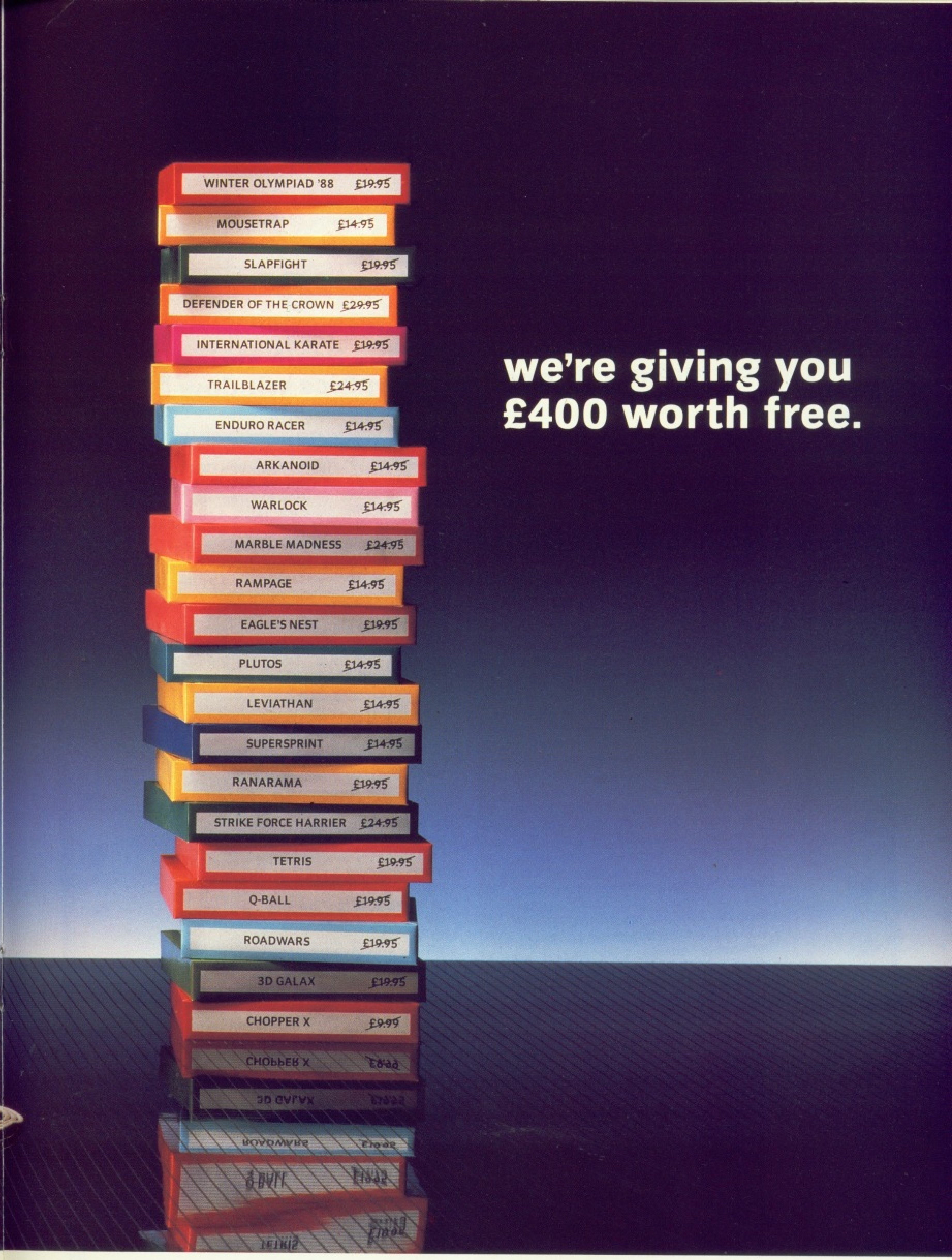

FUEL

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All the colours of the rainbow

LEN GOLDING continues his Basic series by looking through the graphics window

THIS month we depart from the familiar programming screen and embark on a journey into the world of multi-coloured graphics. We'll explain how to print coloured letters, numbers and symbols anywhere on screen, using COLOR and PLOT, and how to change their colours with the SETCOLOR command.

Let's start by examining the new screen format. Try running this program:

```
10 GRAPHICS 2
20 PRINT #6;"TeST"
```

The screen splits into two – a large black area at the top and a smaller blue area at the bottom. The black area contains the word TEST in large, upper-case, multi-coloured letters while the word READY appears in the blue area.

The black area is known as the graphics window – the small blue area is the text window. A normal PRINT command will always send its output to the text window, which is why the READY message appears down there.

If you want to print anything in a graphics window, you must specifically instruct the computer to do so – that's what the #6; is all about.

PRINT #6; always means: Print to the Graphics window. You can't use this command in Graphics 0, because its entire screen is one big text window, so there's nowhere for graphics data to be displayed.

You can remove the text window from Graphics 1 and Graphics 2 screens by adding 16 to your GRAPHICS command number. This will give you a slightly bigger graphics-only window. Try changing line 10 to:

```
10 GRAPHICS 18
```

and run the program. The result is a bit odd: The screen goes briefly dark all over and, if you're quick, you might just see TEST printed as before, but then the screen returns to Graphics 0.

It does this because Basic has to print the READY message somewhere. If there's no text window open, it automatically jumps back into Graphics 0. This isn't normally a problem since games and other real programs never come to an end – there's always some kind of loop which keeps them running indefinitely. You can simulate this by inserting an infinite loop into our short test program:

```
10 GRAPHICS 18
20 PRINT #6; "TeST"
30 GOTO 30
```

Now the screen will stay in Graphics 18, but the computer is completely tied up. You have to press Break or Reset to regain control. Basic will then transport you back to Graphics 0.

You'll get a similar result if there's no text window open when Basic tries to execute an INPUT command, or if a reportable error occurs. For this reason, it's always best to keep the text window while you're developing a program.

Graphic Modes 1, 2, 17 and 18 allow you to print letters and other keyboard characters on screen, but you can use only the upper case or the lower case set at any one time. However, the text is larger than in Graphics 0 and you have four colours to play with. Table I shows the screen characteristics for the four new modes.

Text in a graphics window will normally be printed in upper case unless you switch to a different character set – as we'll explain shortly. If you try to print lower case or inverse letters they will still come out in upper case, but the colour will change.

Upper case letters will give you

Colour register	Default colour	Characters affected by this colour register	Sample SETCOLOR command (using the default colour values)
0	Orange	Upper case letters and numbers	SETCOLOR 0,2,8
1	Yellow	Lower case letters and brightness of text in the text window	SETCOLOR 1,12,10
2	Blue	Inverse numbers, inverse upper case letters, and text window background	SETCOLOR 2,9,4
3	Violet	Inverse lower case letters	SETCOLOR 3,4,6
4	Black	Graphics window background	SETCOLOR 4,0,0

Table I: Colour in Graphic Modes 1 and 2

orange, lower case yellow, inverse upper case blue and inverse lower case violet.

These default colours can be changed using the SETCOLOR command – Table I gives all the relevant information.

Can you see now why the word TEST came out as it did? Try changing the program so that the word is printed all in orange, or all in yellow.

The POSITION command works very nicely with graphics windows so long as you stay within the screen boundaries. For example:

```
10 GRAPHICS 1
20 POSITION 9,9
30 PRINT #6;"test"
```

will print TEST in yellow upper case letters in roughly the centre of the screen. But you can't use POSITION to place characters in the small text window.

If you want to produce any non-standard layout down there you'll have to build it from scratch, using PRINT to start a new line and spaces to shift text horizontally.

Commas and semicolons will continue to work as PRINT statement modifiers in both text and graphics windows:

```
10 GRAPHICS 2
20 PRINT "A","B";"C"
30 PRINT #6;"A","B";"C"
```

In each case the comma causes a jump of 10 character widths to the right.

The LOCATE command also works well, but it doesn't behave in quite the same way as it did in Graphics 0. Instead of just returning an Ascii code LOCATE also tells us the letter's colour. This will be easier to understand if we first look at two new Basic commands: COLOR and PLOT.

It's unfortunate that COLOR – note the spelling – and SETCOLOR look so similar, since they really have very little in common. Unlike SETCOLOR, the COLOR command does not change a colour register: Instead, it specifies the parameters to be used in a PLOT statement.

Confused? Let's look at it in more detail.

COLOR and PLOT always go hand-in-hand. In Graphics 1 and 2, COLOR is used to select a particular character/colour combination. PLOT is then used to position that character on screen and print it. For example:

```
COLOR 65: PLOT 9,4
```

means something like this:

Select the character whose character/colour code is 65, then print it, in the specified colour, at coordinates 9,4 of the graphics window.

You can see that PLOT behaves rather like a combined POSITION and PRINT#6; statement. It's more convenient because once you've specified the COLOR parameter you can PLOT it as many times as you like, to different

Turn to Page 34 ►

◀ *From Page 33*

positions on screen. But how do we know what COLOR code to choose for a particular character/colour combination? For the answer – look it up in Table II.

The only colours you can choose from are those currently held in colour registers 0 to 3. Let's assume that they are holding their default colours, shown at the top of each column in Table II.

We're using the upper case character set, so ignore the lower case (LC) columns for now. Every one of the 64 upper case characters gives you a choice of four different code numbers, each corresponding to a different colour. The code for a yellow ! is 1, a blue ? is 191 and an orange A is 65. So if you run this program:

```
10 GRAPHICS 2
20 COLOR 65:PLOT 9,4
```

you will get an orange letter A printed at centre screen. If you change the COLOR number to 225, the A will turn violet.

Experiment with different values in the COLOR and PLOT commands until you feel comfortable with the upper case character set and can print any of the 64 characters, in any of the four colours, anywhere on screen.

● *That's enough for now. Next month we'll take another look at the LOCATE statement and give you a simple game to demonstrate the techniques we've covered so far.*

COLOUR REGISTER 0	1	2	3		
Orange	Yellow	Blue	Violet	UC	LC
32	0	160	128		♦
33	1	161	129	!	├
34	2	162	130	"	▕
35	3	163	131	#	┘
36	4	164	132	$	┤
37	5	165	133	%	┐
38	6	166	134	&	╱
39	7	167	135	'	╲
40	8	168	136	(	◢
41	9	169	137	)	▗
42	10	170	138	*	◣
43	11	171	139	+	▝
44	12	172	140	,	▘
45	13	173	141	-	▔
46	14	174	142	.	▁
47	15	175	143	/	▖
48	16	176	144	0	♣
49	17	177	145	1	┌
50	18	178	146	2	─
51	19	179	147	3	┼
52	20	180	148	4	●
53	21	181	149	5	▄
54	22	182	150	6	▎
55	23	183	151	7	┬
56	24	184	152	8	┴
57	25	185	153	9	▌
58	26	186	154	:	└
59	27	187	†	;	␛
60	28	188	156	<	↑
61	29	189	157	=	↓
62	30	190	158	>	←
63	31	191	159	?	→

Table II: Character codes used with the COLOR command

COLOUR REGISTER 0	1	2	3		
Orange	Yellow	Blue	Violet	UC	LC
64	96	192	224	@	♦
65	97	193	225	A	a
66	98	194	226	B	b
67	99	195	227	C	c
68	100	196	228	D	d
69	101	197	229	E	e
70	102	198	230	F	f
71	103	199	231	G	g
72	104	200	232	H	h
73	105	201	233	I	i
74	106	202	234	J	j
75	107	203	235	K	k
76	108	204	236	L	l
77	109	205	237	M	m
78	110	206	238	N	n
79	111	207	239	O	o
80	112	208	240	P	p
81	113	209	241	Q	q
82	114	210	242	R	r
83	115	211	243	S	s
84	116	212	244	T	t
85	117	213	245	U	u
86	118	214	246	V	v
87	119	215	247	W	w
88	120	216	248	X	x
89	121	217	249	Y	y
90	122	218	250	Z	z
91	123	219	251	[	♠
92	124	220	252	\	|
93	†	221	253	]	↰
94	126	222	254	^	◀
95	127	223	255	_	▶

UC = Upper-case set
LC = Lower-case set
† These codes are not used

ATARI USER MAIL ORDER OFFERS

This Toolkit is a MUST!

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Programming becomes so much easier when you've got the right tools for the job. With this *Atari User* package you can add TEN new commands to Atari Basic to dramatically improve your performance. *PLUS* your Atari will generate meaningful error messages instead of cryptic numbers.

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TO ORDER PLEASE USE THE FORM ON PAGE 53

Get it right! II

For new and old readers alike we reprint our superfast checksum program and explain it in detail

A number of readers have written asking what the strange tables of figures alongside each listing in the magazine are used for. Well they're designed to show you where an error is in a line you have just typed in. They work in conjunction with a special program last printed in the November 1987 issue of *Atari User*.

Since probably quite a number of new readers won't have seen the original article we have decided to reprint it for their benefit and for those of you who missed it the first time around. In fact, this version is slightly shorter, since it no longer stores the 256 byte buffer area – which was in any case overwritten by data as soon as the program was used.

Get It Right II is a checksum generator program written completely in machine code for high speed operation and ease of use. There is no need for you to constantly save and reload your program since it sits permanently in memory always ready for use.

In addition it does not require the use of page six, or indeed any of the zero-page locations, making it compatible with almost any program you might type in.

The first thing you need to do is type in the program listing. This is a fairly simple Basic program which will create a boot cassette or autorun disc containing the Get It Right routine itself.

You should be especially careful when typing in the DATA statements since they contain machine code routines which must be entered accurately for the program to run at all.

When you're sure you've typed it in correctly, run the program and you will be asked if you want to make a cassette or disc version. Press C or D accordingly and the computer will prepare the appropriate machine code. This will take roughly 40 seconds. Cassette users should now place a fresh tape in the recorder and wind it to the beginning.

When you hear the two beeps press the Record and Play buttons followed by the Return key. The computer will now create an autoboot tape version of GIR II for you. This will take another 45 seconds.

Disc users should make sure there is a formatted Dos disc in drive one with at least 10 free sectors available for the AUTORUN.SYS file which will be created. This disc will become your new boot disc so you should have already written any Dos files you require to it – Option H on the Dos 2.5 menu.

This checksum routine has been designed to work with most types of Dos with a LOMEM value below *$3000* – such as Dos XL or SpartaDos – and it will automatically adjust itself to suit your particular memory configuration.

If you don't wish to save the final program as an autorun file you could alter the filename on line 3030 to suit your own system. SpartaDos users could call the file D:GIR.COM and access it when required by simply typing GIR from the command processor.

From this point on you won't need the full Basic program again. Instead you should use the master disc or boot tape which you have just created each time you power the system up. The disc version is automatic – simply turn the computer on with your newly-created GIR II master disc in drive one and the checksum program will load into memory.

Cassette users should place their new GIR II boot tape in the recorder, rewind it to the beginning and press Play. Then turn the computer on while holding down the Start button and press Return after the beep. Loading will take about 45 seconds, after which the checksum program will initialise itself. You should **not** hold down the Option button when loading GIR II.

After loading is complete using either disc or tape you will see the message:

```
GET-IT-RIGHT-II _ Loaded OK
```

followed by the normal READY prompt.

Obtaining a checksum from the new system couldn't be simpler. After you've typed in the Basic program you wish to check you should enter the command:

```
LIST "G:"
```

and the checksum will appear on the screen.

To momentarily stop and start it simply use the Control+1 keys in the

To make a GIR II disc version

- Format a new disc and write your own choice of Dos files to it – for example using the H option on the Dos 2.5 menu
- Boot the system with this disc in place
- Type in and run the program. Select option D for disc
- The file AUTORUN.SYS will be written to the disc in drive one. This disc will now become your **GIR II Master Disc**.

You could create a different filename by altering line 3030 – see your Dos manual for possibilities.

To make a GIR II cassette version

- Type in and run the program. Select option C for cassette
- Rewind a fresh tape then press Record and Play. Hit Return when asked
- The program will take about 45 seconds to save. This will now become your **GIR II Master Tape**

same way as you would with any other listing – or hit the Break key to abort it completely. Alternatively you can specify output to a printer by entering:

```
LIST "G:P"
```

You will notice that each line consists of three parts. The first is the line number in question followed by the actual three-digit checksum. This segment is the most important since it will always match the value printed in the magazine if you have typed the entire line correctly.

The final digit on the line – enclosed in brackets – is a special cumulative check digit. This gives a quick estimate of the running total of the checksums given so far in the listing. Any lines following one containing an error will also have the wrong cumulative digit. You can use this feature to help you find any errors by simply looking through this final column until you find a mismatch.

You will notice that most checksum lines consist of both numbers and letters, but don't worry – there won't be any eight's to confuse with zeros, or indeed any other tricky digits such as one and the letter I, zero and the letter O or two and the letter Z. These are always avoided by the program.

- To checksum a program to the screen, use:
  LIST "G:"
- To checksum a program to the printer, use:
  LIST "G:P"
- To checksum a single line to the screen, use:
  LIST "G:" , *line-no*
- To checksum a single line to the printer, use:
  LIST "G:P" , *line-no*
- To checksum a range of lines to the screen, use:
  LIST "G:" , *first-line-no* , *last-line-no*
- To checksum a range of lines to the printer, use:
  LIST "G:P" , *first-line-no* , *last-line-no*

To make typing easier for you, anything coming after a REM statement will be ignored by GIR II. Thus the two lines:

```
10 REM THE FIRST LINE
```

and:

```
10 REM
```

would produce the same checksum value – CP1. However, don't feel tempted to leave the line out completely because the program might need to branch to it using a GOTO or GOSUB statement.

To load GIR II from tape – every time you turn the computer on

- Place your **GIR II Master Tape** into the cassette recorder, rewind it and press Play
- Turn on the computer while holding down the Start button – but NOT the Option button
- After the single beep press the Return key
- Wait for the Loaded OK message and the READY prompt.

You can even use GIR II to test individual lines – such as a block of DATA statements you might have been having trouble with. To check a single line – say 1000 – type:

```
LIST "G:",1000
```

and to check a block of lines (say 100 to 500) type:

```
LIST "G:",100,500
```

However, don't forget that the cumulative check digit will be incorrect in such cases as it obviously can't know what the values from the previous lines would have been. When checking through selected lines of a program, ONLY look at the main three-digit part of the checksum.

Both cassette and disc versions are completely protected from accidental erasure – typing NEW or pressing System Reset will not harm them at all. In fact, apart from the fact that your free memory space has been reduced by 882 bytes, you will probably never even notice that the checksum routine is loaded.

Dos 2.0 and 2.5 users should note that going to the Dos command menu will overwrite the memory space used by Get It Right II. In order to retain the routine when returning to Basic you should make sure you have enabled the MEM.SAV facility on your boot disc. This is the default condition when using Dos 2.5 with a 130XE ramdisc.

More advanced programmers might be interested in the assembler source code listing for Get It Right II which we printed in the December 1987 issue of *Atari User*. See Page 61 for the back-issue order form.

● *So that's it – a faster and much improved checksum program. As you will have noticed, all program listings in* Atari User *are accompanied by GIR II checksum tables, so hopefully even more of you will now find it even easier to get it right.*

To load GIR II from disc – every time you turn the computer on

- Place your **GIR II Master Disc** into drive one
- Turn on the computer. Do not hold down either the Start or Option buttons
- Wait for the Loaded OK message and the READY prompt.

```
1 REM ******************************
2 REM
3 REM GET-IT-RIGHT: VERSION 2.1
4 REM COPYRIGHT:    ATARI USER 1988
5 REM WRITTEN BY:   ANDRE WILLEY
6 REM VERSION DATE: 11/4/88
7 REM
8 REM ******************************
9 REM
50 DIM A$(4000):A$(1)=CHR$(0):A$(4000)
=CHR$(0):A$(2)=A$
100 GRAPHICS 0:POKE 752,1:? :? "GET-IT
-RIGHT II CREATOR PROGRAM V2.1"
110 ? :? "  Copyright (C)  Atari User,
 1988"
120 ? :? :? "      Written by Andre Wi
lley"
130 ? :? :? :? :? "  CREATE CASSETTE (
C) OR DISC (D)?";
140 POKE 764,255:ADD=ADR(A$)
150 IF PEEK(764)=58 THEN 200:REM DISC
160 IF PEEK(764)=18 THEN 300:REM CASS
170 GOTO 150
200 REM DISC
210 ? CHR$(156);"   READING DATA -- P
LEASE WAIT";
220 REST=500:GOSUB 400
230 REST=1000:GOSUB 400
240 REST=700:GOSUB 400
250 SIZE=ADD-ADR(A$)
260 GOTO 3020
300 REM CASSETTE
310 ? CHR$(156);"   READING DATA -- P
LEASE WAIT";
320 REST=600:GOSUB 400
330 REST=1000:GOSUB 400
340 REST=800:GOSUB 400
350 SIZE=PEEK(ADR(A$)+1)*128
360 GOTO 3000
400 REM READ DATA INTO MEMORY
410 CHK=0:MULT=1:RESTORE REST:POKE 764
,255
420 READ A:IF A=-1 THEN 460
430 IF A=500 THEN ADD=ADD+256:GOTO 420
440 POKE ADD,A:ADD=ADD+1:CHK=CHK+(A*MU
LT):MULT=MULT+1:IF MULT>8 THEN MULT=1
450 GOTO 420
460 READ A:IF A=CHK THEN RETURN
470 ? :? :? :? "DATA ERROR SOMEWHERE A
FTER LINE ";REST:? :? "*** PLEASE CHEC
K EACH DATA LINE ***":? :END
500 REM DISC HEADER
510 DATA 255,255,0,48,205,52,-1,2294
600 REM CASSETTE HEADER
610 DATA 0,10,250,47,205,52,-1,2295
700 REM DISC FOOTER
710 DATA 76,52,50,255,255,224,2,225,2,
0,48,-1,5929
800 REM CASSETTE FOOTER
810 DATA 165,12,133,2,165,13,133,3,160
```

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◄ From Page 37

```
,2,169,234,145,2,136,16,251,24,96,-1,6
465
990 REM MAIN PROGRAM DATA
1000 DATA 76,61,52,27,48,75,48,81,48,8
4,48,75,48,75,48,76,76,48,0
1010 DATA 0,0,0,0,0,0,0,0,0,169,0,141,
18,48,141,21,48,160,2,177,36,201,58,20
8,3
1020 DATA 200,177,36,201,155,240,20,20
1,83,240,16,201,69,240,12,201,80,208,5
,141,25,48,240,8,160
1030 DATA 139,96,169,83,141,25,48,160,
1,96,160,137,96,160,146,96,172,21,48,1
92,255,240,243,153,116
1040 DATA 50,201,155,240,35,238,21,48,
208,228,168,162,0,173,25,48,201,80,240
,10,173,7,228,72,173
1050 DATA 6,228,72,152,96,173,55,228,7
2,173,54,228,72,152,96,160,0,140,21,48
,140,19,48,140,20
1060 DATA 48,140,24,48,140,22,48,140,2
3,48,240,106,160,255,200,185,116,50,20
1,155,240,4,201,32,208
1070 DATA 244,192,5,176,14,140,26,48,1
69,32,32,104,48,172,26,48,200,208,238,
160,0,140,26,48,185
1080 DATA 116,50,201,32,240,13,201,155
,240,9,32,104,48,172,26,48,200,208,233
,169,32,32,104,48,173
1090 DATA 20,48,41,124,74,74,168,185,1
7,50,32,104,48,173,20,48,41,3,10,10,10
,141,26,48,173
1100 DATA 19,48,41,224,74,74,74,74,74,
13,26,48,168,185,17,50,208,9,185,116,5
0,201,155,240,143
1110 DATA 208,63,32,104,48,173,19,48,4
1,31,168,185,17,50,32,104,48,169,32,32
,104,48,169,40,32
1120 DATA 104,48,173,18,48,41,31,168,1
85,17,50,32,104,48,169,41,32,104,48,16
9,155,32,104,48,152
1130 DATA 72,169,0,168,153,116,50,200,
208,250,104,168,96,240,184,152,72,136,
136,136,185,116,50,201,58
1140 DATA 240,4,201,32,208,28,162,3,20
0,185,116,50,221,9,50,208,17,202,208,2
44,104,168,173,23,48
1150 DATA 208,82,173,22,48,208,77,240,
145,104,168,185,116,50,201,34,208,17,1
73,22,48,208,61,173,23
1160 DATA 48,73,1,41,1,141,23,48,208,4
9,152,72,136,136,136,136,185,116,50,20
1,58,240,4,201,32
1170 DATA 208,30,162,4,200,185,116,50,
221,12,50,208,19,202,208,244,173,23,48
,208,11,169,1,141,22
1180 DATA 48,208,4,169,0,240,137,104,1
68,169,0,141,27,48,185,116,50,141,26,4
8,174,24,48,240,9
1190 DATA 14,26,48,46,27,48,202,208,24
7,173,18,48,77,27,48,77,26,48,141,18,4
8,173,19,48,24
1200 DATA 109,26,48,141,19,48,173,20,4
8,109,27,48,141,20,48,200,206,24,48,16
,188,169,7,141,24
1210 DATA 48,208,181,77,69,82,65,84,65
,68,79,49,50,51,52,53,54,55,56,57,65,6
7,68,69,70
1220 DATA 71,72,74,75,76,77,78,80,81,8
2,83,84,85,86,87,88,89,32,52,18,160,0,
185,26,3
1230 DATA 240,40,201,71,240,7,200,200,
200,192,33,208,240,169,0,141,231,2,133
,14,133,128,169,0,141
1240 DATA 232,2,133,15,133,129,162,9,1
69,0,157,18,48,202,16,250,96,169,3,153
,27,3,169,48,153
1250 DATA 28,3,169,71,153,26,3,208,210
,500,16,48,93,48,160,48,194,48,84,49
1300 REM 256-BYTE BUFFER AREA HERE
1360 DATA 98,49,125,49,155,49,169,49,2
03,49,7,49,68,49,227,48,2,49,25,49,47,
49,180,48,205
1370 DATA 48,216,48,230,48,16,49,28,49
,38,49,50,49,55,49,60,49,33,49,101,49,
172,49,31,48
1380 DATA 140,48,143,48,219,48,233,48,
244,48,19,49,41,49,223,49,232,49,235,4
9,242,49,245,49,251
1390 DATA 49,34,48,86,48,100,48,137,48
,149,48,116,49,132,49,187,49,152,48,11
1,49,137,49,144,49
1400 DATA 180,49,146,48,209,49,255,49,
6,50,64,48,74,48,108,48,175,48,183,48,
191,48,208,48,241
1410 DATA 48,254,48,206,49,214,49,229,
49,239,49,200,49,217,49,226,49,248,49,
93,50,3,48,5,48
1420 DATA 7,48,9,48,11,48,13,48,0,0,15
5,199,197,212,173,201,212,173,210,201,
199,200,212,173,201
1430 DATA 201,32,45,32,76,111,97,100,1
01,100,32,79,75,155,155,0,169,60,141,2
,211,160,0,152,72
1440 DATA 185,30,52,240,8,32,104,48,10
4,168,200,208,241,104,165,12,141,50,50
,165,13,141,51,50,173
1450 DATA 231,2,133,208,141,100,50,24,
105,114,141,71,50,173,232,2,133,209,14
1,105,50,105,3,141,80
1460 DATA 50,56,169,3,229,208,133,203,
169,48,229,209,133,204,56,169,49,229,2
03,133,12,169,50,229,204
1470 DATA 133,13,162,0,160,0,189,116,5
1,133,205,189,117,51,240,20,133,206,56
,177,205,229,203,145,205
1480 DATA 200,177,205,229,204,145,205,
232,232,208,224,162,4,160,0,185,3,48,1
45,208,200,208,248,238,187
1490 DATA 52,230,209,202,208,238,230,2
02,-1,447146
3000 REM SAVE TO CASSETTE
3010 POKE 764,255:? CHR$(156);"PRESS R
ECORD AND PLAY AND HIT RETURN";:OPEN #
1,8,128,"C:":GOTO 3040
3020 REM SAVE TO DISC
3030 OPEN #1,8,0,"D:AUTORUN.SYS"
3040 ? CHR$(156);"     SAVING DATA - P
LEASE WAIT";
3100 POKE 850,11
3140 BUFHI=INT(ADR(A$)/256):POKE 853,B
UFHI
3120 BUFLO=ADR(A$)-(BUFHI*256):POKE 85
2,BUFLO
3130 LENHI=INT(SIZE/256):POKE 857,LENH
I
3140 LENLO=SIZE-(LENHI*256):POKE 856,L
ENLO
3150 RESTORE 3160:FOR I=0 TO 5:READ A:
POKE 1536+I,A:NEXT I
3160 DATA 104,162,16,76,86,228
3170 Z=USR(1536)
3200 CLOSE #1:POKE 752,0
3210 ? CHR$(156);"          FILE COMP
LETE":? :? :? :? "DON'T FORGET TO LOAD
 IT EACH SESSION":?
3220 END
```



The Atari World team

The wonderful world of Atari

NEIL FAWCETT takes a trip underground to visit a famous software house

UMBRELLA at the ready, I journeyed to Manchester seeking Atari World. The long time Mecca for Atari users in the North West, and still one of the biggest stockists of 8 bit products, it is also the home of Red Rat software.

As a stranger to the city I had every excuse for getting lost – so I promptly did, eventually discovering Atari World on Fennel Street near Victoria Station only after I had walked past it twice. My excuse being that the premises are below street level – a subterranean location which provided inspiration for the name of the software house.

Inside I met Charles Partington, Don Rigby and Karen Sutherland who run the shop and software scene. There also was Bryan King, the in-house artist, busy with various tasks.

Unfortunately Harry Nadler, Atari fanatic and one of the original partners in Atari World, was away ill. He and Charles Partington formed the company and opened ther shop in 1985. In those days Atari World was purely 8 bit orientated, catering for what turned out to be a large market populated by devoted users.

A profitable first year provided the impetus for becoming further involved in the Atari market. With all those customers walking through the door every day the situation was tailor-made for software marketing, and so Red Rat was born.

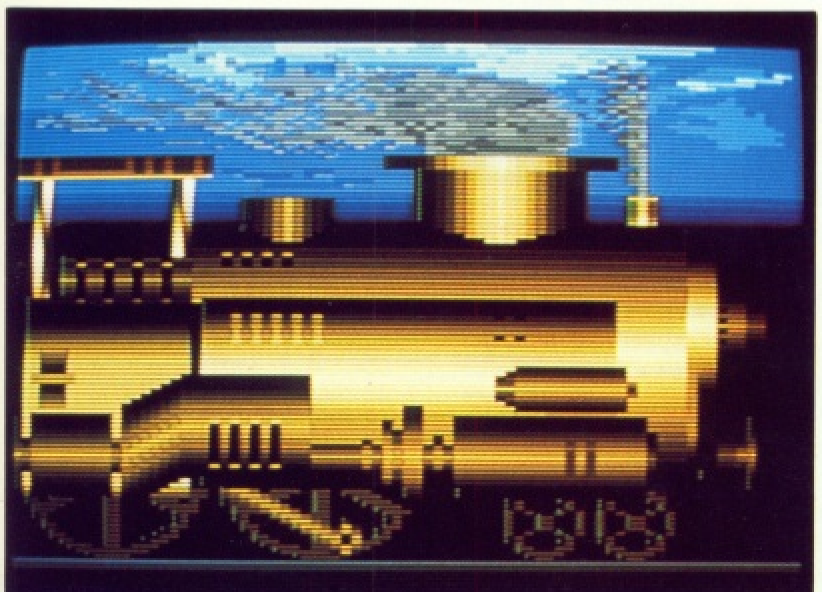
The first two titles released were Technicolour Dream and Panic Express. Technicolour Dream is an artist program written by Keith Watterson and David Forward that puts to use the Atari's tremendous graphics capabilities. With it you can actually draw in 256 colours.

Panic was authored by Don Rigby – a freelance writer at the time – and it surprised everybody by being a huge success. Sold as a back-to-back tape – it had a Commodore 64 version on the B side – Panic was number one in the French software charts for six weeks and eventually sold around 4,500 copies at £3.99.

The back-to-back tape idea was subsequently copied by several companies and has proved an ingenious money spinner. This clever innovation caught the eye of P.S.L Marketing who approached Red Rat at a computer show in London and began distributing its games.

In the summer of 1987 the market changed. P.S.L decided it didn't want

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Demonstration pictures created by Technicolour Dreams

◀ *From Page 39*

any more 8 bit products so Red Rat got Microdealer International to handle its goods.

After further upheavals it now sells through United Software Distribution. The various ups and downs of swapping distribution companies didn't stem the flow of new titles. Many games were released – notable among them Screaming Wings, Lazer Hawk, Space Lobsters and Astro Droid. One of the funniest games was Space Lobsters which was originally called Ooh eck!

Astro Droid – my first major games review in *Atari User* – is a superb shoot-'em-up with excellent graphics. Lazer Hawk didn't sell as well as it should, which is surprising as it is well written and very addictive.

Screaming Wings sold well, and again offers excellent value for money. It's now available on a compilation disc or cassette.

Today all the software development work is done in Prescot, Merseyside, where Red Rat's six programmers and two graphic artists toil. At the moment, much of the work revolves around the ST due to a problem with the in-house 8 bit distribution.

The shop is doing very well despite one big handicap. It has become very difficult to get hold of enough 8 bit hardware to sell. Cassette decks, 850 interfaces, Atari SMM 801/804 printers and 1050 disc drives would go like hot cakes.

Unfortunately, the likes of the 1050 are virtually impossible to obtain and the late arrival of the new Atari drive is causing a problem.

Another big problem concerns 8 bit software. Even though the games Atari World stocks sell very well, it is practically impossible to get a distributor to take on any 8 bit Atari software. This is the main reason behind the decline in that area.

It's not the quality of the games or the number of titles coming out, it's simply down to distributors not taking the products of software houses. This problem is affecting not only Red Rat but an awful lot of other companies as well.

Don Rigby said: "We intend to carry on writing software for the 8 bit Atari in the forseeable future. We also plan to release Speed Run very soon and have several other ideas in mind.

"Our major worry is distribution – if we can't get a product to the people who want it there's no point in writing it."

You can only agree with Don Rigby and sympathise with other companies sharing the same problem. It's a shame Atari 8 bit machines have never had the recognition they deserve – after all, they are the best 8 bit micros ever produced and they've earned their reputation over nearly 10 years.

However, the good news is that the friendly bunch of Atari 8 bit fanatics in Fennel Street are determined to battle on in what is now a rather unfriendly market.

SOFTWARE *Solutions*

WELCOME to Software Solutions. Let's kick off straight away with a letter from Mr J.L. Magrath from Dewsbury in West Yorkshire who writes:

Can you please help me by explaining how to produce more interesting sound effects on the Atari than the Basic SOUND statement allows?

After all, four programmable voices immediately suggests harmonisation. The problem is that to harmonise tunes pitched at commonly used frequencies requires bass notes below the Atari's normal range.

I would also be interested to know how the sound is generated and so appreciate why there are a finite number of discrete notes rather than an infinitely variable scale.

Advanced sound production is something which we plan to do a feature on in a future issue of *Atari User*, but in the meantime let's discuss the points you've raised in your letter.

Firstly, sound is created by our good friend the POKEY chip and controlled internally via a series of special memory registers located between addresses *$D200* and *$D20F*. When you issue a SOUND command Basic adjusts these locations accordingly in order to create the tone you require.

However, the POKEY chip is far more versatile than a simple four parameter SOUND command could ever hope to be, so you'll need to POKE some of these registers directly in order to give more flexibility to your music.

Each of the four registers is controlled by two locations in memory, one for the frequency and the other for the volume and distortion value – see Figure I. These control registers are one byte long, and can only accept a value between zero and 255 – hence the limit of 255 tonal steps with the SOUND command.

Let's do a quick translation of a normal SOUND command into internal register values. When you type SOUND 0,75,10,8 you are accessing internal sound register number one. This is because internal numbering starts at one whereas Basic, for some reason, starts at zero – thus SOUND 3,0,0,0 would affect internal register *four*, not three.

The frequency value – 75 in our example – is placed straight into the AUDF1 register *$D200*. The volume value (8) and the distortion control (10) must then be combined together before they can be placed into the AUDC1 register *$D201*. To do this, simply multiply the distortion value by 16 and add it to the volume level. This would would give 10 times 16 (or 160) plus 8 – a total value of 168.

Before setting these locations it's always a good idea to POKE 53775,3. This is required because the POKEY chip is also responsible for handling the output frequencies for the cassette I/O, and a value of three stored in this register will reset POKEY ready for normal audio use.

When you do a SOUND 0,0,0,0 Basic will initialise AUDCTL (location *$D208*) to zero. It is this action which limits your audio flexibility. Figure II shows the available functions of AUDCTL. You can see that it is really the most powerful of all the audio registers.

It would take too long to explain it in full, but briefly it controls the clock frequency used to generate tones, plus the polynomial counters which divide those tones into small packets to give special sound effects – or distortions.

Basically at higher clock frequencies the notes you hear will also become higher. The normal clock frequency is 64 kHz, so if you alter this to 15 kHz by using POKE 53768,1 then all the notes you can obtain from any SOUND command will become lower.

Similarly, POKEing in a number with

Address	Name	Function
$D200 (53760)	AUDF1	Channel one audio frequency (as SOUND 0,freq,n,n)
$D201 (53761)	AUDC1	Channel one control (lowest four bits = Volume, highest four bits = Distortion)
$D202 (53762)	AUDF2	Channel two audio frequency (as SOUND 1,freq,n,n)
$D203 (53763)	AUDC2	Channel two control (as for channel one)
$D204 (53764)	AUDF3	Channel three audio frequency (as SOUND 2,freq,n,n)
$D205 (53765)	AUDC3	Channel three control (as for channel one)
$D206 (53766)	AUDF4	Channel four audio frequency (as SOUND 3,freq,n,n)
$D207 (53767)	AUDC4	Channel four control (as for channel one)
$D208 (53768)	AUDCTL	Audio control register (filters, clock rates, etc.)
$D20F (53775)	SKCTL	Serial port control (POKE with 3 to remove any left-over cassette I/O sounds)

Figure I: Sound control registers

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32 added to it will switch register one to 1.79 MHz, thus giving a much higher tone from that register only. Adding 64 can do the same for sound register three, although registers two and four will always remain at the default rate.

Don't forget that the SOUND command will always zero this control register. If you don't want to POKE all of your values directly into the frequency registers you should place your POKE 53768,N somewhere after the SOUND command. Bits one, two and seven of this register control the filter system, and are only of use if you want to create distorted special effects sounds.

The final two bits in the register, bits three and four, will probably be the most useful ones to you. They allow you to link up two of the sound registers to act as a single 16 bit sound generator with an available frequency range from 0 to 65535 – covering roughly nine octaves.

Adding a value of 8 will join channels three and four while a value of 16 will join channels one and two. You may then use the two joined frequency registers to control a single pitch – the second one giving coarse control while the first allows fine adjustment.

The short program listing given will demonstrate this effect. Note that I have only set the volume on one of the sound registers and only selected the 1.79 MHz clock rate.

Hopefully, this will have given you something to ponder over and you might find a bit of experimentation will give you some amazing results.

Bit to add	Value	Function
0	+1	Switch main clock rate from 64 kHz to 15 kHz
1	+2	High pass filter for channel two, clocked by channel four
2	+4	High pass filter for channel one, clocked by channel three
3	+8	Join channels three and four (use as one 16 bit register)
4	+16	Join channels one and two (use as one 16 bit register)
5	+32	Clock channel three with 1.79 MHz
6	+64	Clock channel one with 1.79 MHz
7	+128	Switch 17 bit poly counter to a 9 bit poly counter

Figure II: Bit usage of AUDCTL register ($D208 – 53768)

```
10 GRAPHICS 0:POKE 752,1
20 SOUND 0,0,0,0:REM RESET REGISTERS
30 POKE 53768,64+16:REM SET CLOCK RATE
 AND LINK CHANNELS ONE AND TWO
40 POKE 53761,160:POKE 53763,168:REM S
ET VOLUME ON CHANNEL TWO AND PURE TONE
S ON BOTH CHANNELS
50 FOR COARSE=0 TO 255
60 FOR FINE=0 TO 255 STEP 1
70 POKE 53760,FINE:POKE 53762,COARSE
80 POSITION 8,10:? "COARSE = ";COARSE;
".FINE = ";FINE;"        "
90 NEXT FINE
100 NEXT COARSE
```

NYOUT

STEPHEN WILLIAMSON brings an old Korean board game to the Atari

THIS is a computer version of a board game invented in Korea more than 3,000 years ago. The aim is to move four counters around a circular board and the winner is the first player to complete one circuit with all his counters.

The original game is played on a wooden board on which 29 points are arranged in a circular pattern with a cross shape in the middle. The distance that a counter – or horse because it's shaped like one – can move is decided by throwing four sticks made of bone, charred and curved on one side and white and flat on the other.

In this simulation four rectangles are displayed at the top of the screen representing the bone sticks and below is the board depicting the 29 points in a circular pattern. Five are larger than the rest and are known as cardinal points.

They represent the four cardinal points of a compass – North, South, West and East – with the central point linking them.

Moves are decided by the position of the sticks that randomly fall on either the white or black side, and score as follows:

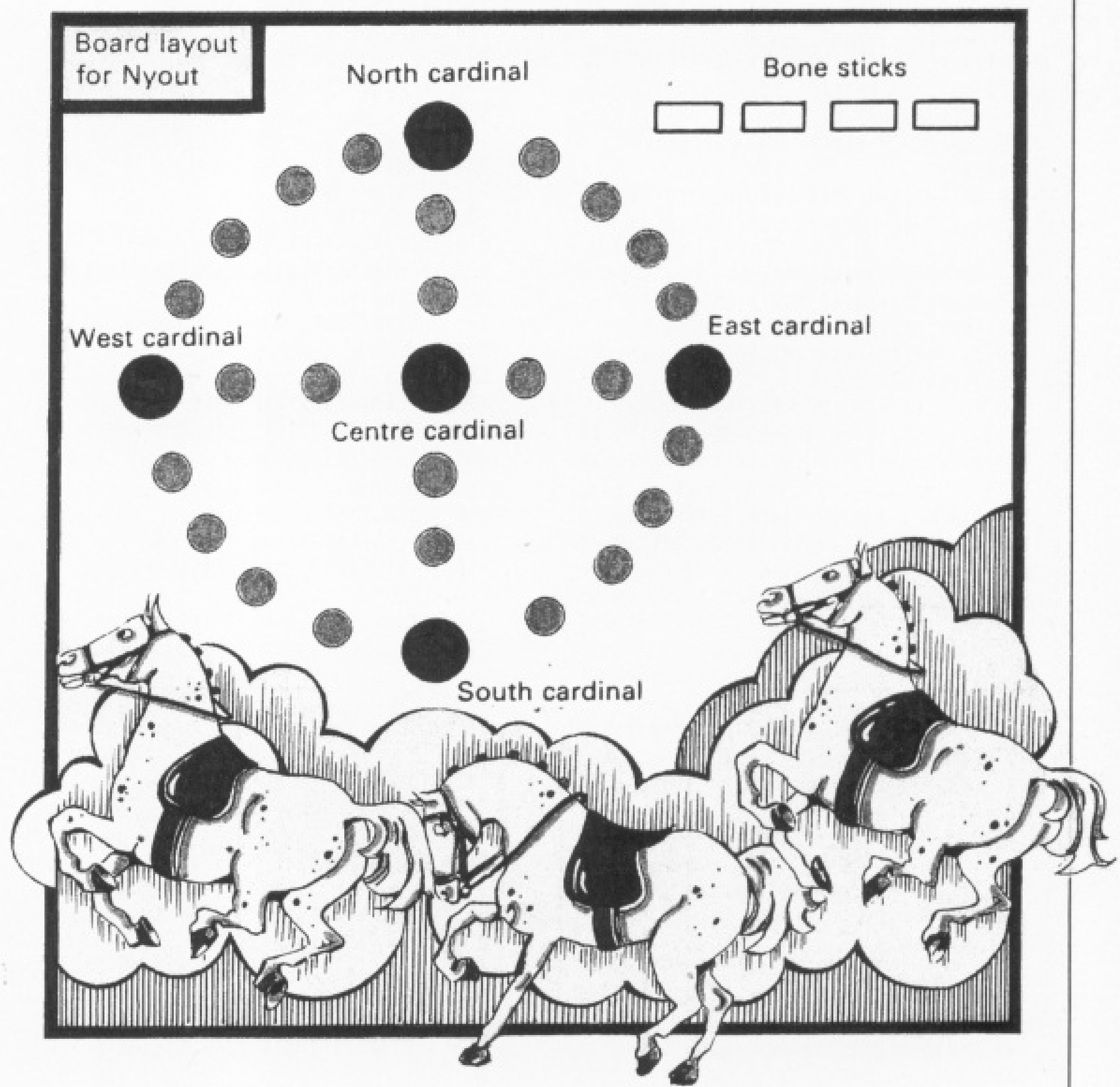
1 White	1 move
2 White	2 moves
3 White	3 moves
4 White	4 moves and an extra throw
4 Black	5 moves and an extra throw

When you are awarded an extra throw the two scores are added together, but they can't be treated as two separate moves. All four horses can be on the board at any time and you choose the one to move using the joystick(s) plugged into ports one and two.

Select the horse you want to move by moving the arrow – with the joystick – on to it and pressing fire. You can stack horses on top of each other, allowing you to move them with only one roll of the sticks.

Horses enter the board from the start position on the immediate left of the north cardinal and move in an anti-clockwise direction. You must leave the board by landing on the north cardinal point then moving off it to the finishing position at the top right-hand side of the screen.

If at the end of a go a horse lands on another horse or one of the west, south or central cardinals the following additional rules apply:



● A horse finishing on the west cardinal takes a short cut and moves along the horizontal bar of the cross-shaped pattern in the middle of the board. Similarly, a horse finishing on the south cardinal heads north along the vertical bar.

● A horse moving east which lands on the central cardinal point takes a further short cut and heads north along the top half of the vertical bar.

● If a player's horse finishes its turn by landing on own horse or horses, in subsequent turns they are moved together in a stack with the number in it shown below the relative counter.

● If a horse lands on a point occupied by one or more of an opponent's horses, all are knocked off the board and sent back to the starting position to begin again.

The winner is the first person to move all four horses to the finishing position off the board. Although it should only take one game to understand how to play Nyout, like Backgammon and similar board games, strategic play is a strong element.

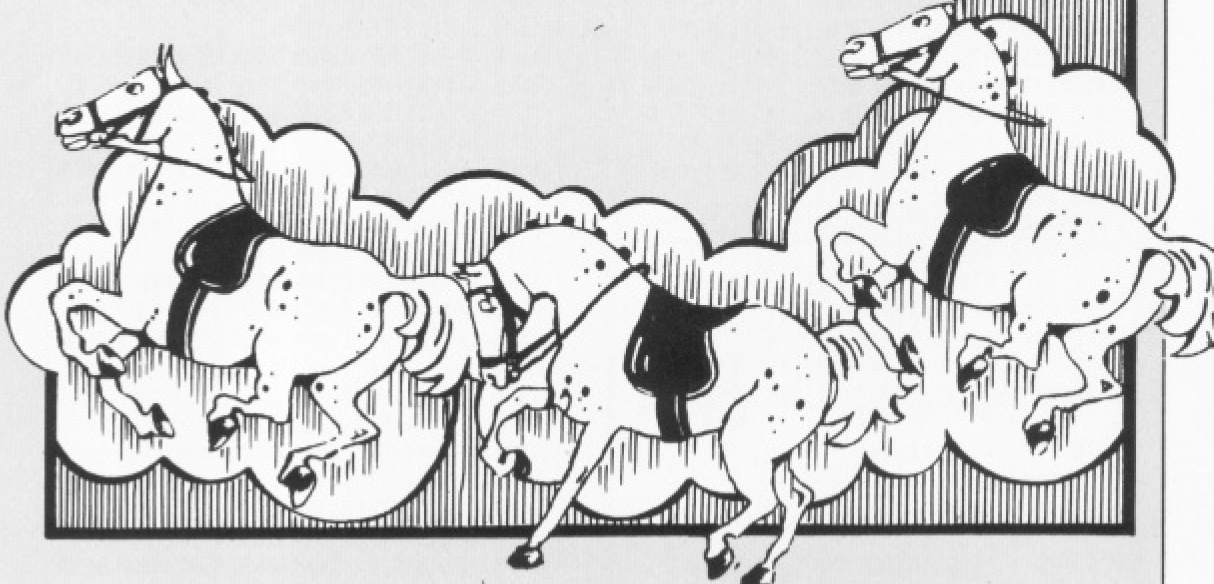
The computer is programmed to play an intelligent game and should beat an inexperienced player. It considers every possible move during its turn and gives a score for each potential move. For example, a horse that can land on another counter or a cardinal point is given a better move value than one that will finish on an unoccupied space. A random factor is built into its strategy so that the computer's play does not become too predictable.

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```
10 REM ************************
20 REM *        NYOUT         *
30 REM *BY STEPHEN WILLIAMSON*
40 REM *    (c)ATARI USER     *
50 REM ************************
60 GOSUB 2500:POKE 82,0
70 SM=PEEK(88)+256*PEEK(89)
80 DIM PLFINISH(2),COUNT(4),STACK1(4),
TAKE(4),VALUE(4),CARDINAL(4),FINISH(4)
,DANGER(4)
90 DIM P(44),PLAYER(2,5),NAME$(20),P1N
AME$(10),P2NAME$(10),SCORE(4),STACK(2,
5),PLOFF(2),HORSE(2)
100 NAME$="":P1NAME$="HUMAN":P2NAME$="
COMPUTER"
110 GRAPHICS 1:POKE 708,12:POKE 709,30
:POKE 710,22:POKE 711,202:SETCOLOR 4,1
,0
120 POKE 756,M:POKE 752,1
130 PLOFF(1)=SM+41:PLFINISH(1)=SM+51
140 PLOFF(2)=SM+43:PLFINISH(2)=SM+53
150 STICK1=SM+6:STICK2=SM+8:STICK3=SM+
10:STICK4=SM+12
160 HORSE(1)=251:HORSE(2)=187
170 P(1)=SM+107:P(2)=SM+105
180 P(20)=SM+109:P(19)=SM+111:P(18)=SM
+113
190 STACK(2,1)=155:STACK(2,2)=190:STAC
K(2,3)=157:STACK(2,4)=158:STACK(2,0)=0
200 STACK(1,1)=219:STACK(1,2)=254:STAC
K(1,3)=221:STACK(1,4)=222:STACK(1,0)=0
210 C=0:FOR I=3 TO 7:P(I)=SM+143+C:C=C
+40:NEXT I
220 C=0:FOR I=8 TO 12:P(I)=SM+345+C:C=
C+2:NEXT I
230 C=0:FOR I=13 TO 17:P(I)=SM+315+C:C
=C-40:NEXT I
240 C=0:FOR I=30 TO 36:P(I)=P(5)+C:C=C
+2:NEXT I
250 C=0:FOR I=37 TO 43:P(I)=P(10)+C:C=
C-40:NEXT I
260 FOR I=1 TO 4:PLAYER(1,I)=0:PLAYER(
2,I)=0:NEXT I
270 GOSUB 400
280 REM ***DECIDE WHO GOES FIRST***
290 ? CHR$(125):? "Throw to decide who
 goes first"
300 NAME$=P1NAME$:GOSUB 790:P1SCORE=TO
TAL
310 FOR DELAY=1 TO 200:NEXT DELAY
320 NAME$=P2NAME$:GOSUB 790:P2SCORE=TO
TAL
330 ? P1NAME$;" ";P1SCORE;" ";P2NAME$;
" ";P2SCORE
340 IF P1SCORE=P2SCORE THEN ? "SCORES
EQUAL, THROW AGAIN":GOTO 300
350 IF P1SCORE>P2SCORE THEN ? P1NAME$;
" SCORES HIGHEST AND PLAYS FIRST":T=2
360 IF P2SCORE>P1SCORE THEN ? P2NAME$;
" SCORES HIGHEST AND PLAYS FIRST":T=1
370 FOR DELAY=1 TO 500:NEXT DELAY
380 GOTO 1110
390 REM ***DRAW BOARD***
400 FOR I=1 TO 20:POKE P(I),75:NEXT I
410 FOR I=30 TO 36:POKE P(I),75:NEXT I
420 FOR I=37 TO 43:POKE P(I),75:NEXT I
430 POKE P(20),32:POKE P(5),32:POKE P(
10),32:POKE P(15),32
440 POKE P(33),32:POKE P(20),32
450 POKE PLOFF(1),HORSE(1):POKE PLOFF(
1)+20,STACK(1,4)
460 POKE PLOFF(2),HORSE(2):POKE PLOFF(
2)+20,158
470 FOR I=SM+6 TO SM+12 STEP 2:POKE I,
1:NEXT I
480 REM ***SELECT OPPONENTS***
490 ? CHR$(125);P1NAME$;" v ";P2NAME$
500 ? "Press  SELECT  to change oppone
nts"
510 ? "Press  START   to start game"
520 FKEY=PEEK(53279):IF FKEY=7 THEN 52
0
530 IF FKEY=5 AND P2NAME$="COMPUTER" T
HEN P2NAME$="HUMAN":GOTO 490
540 IF FKEY=5 AND P2NAME$="HUMAN" THEN
 P2NAME$="COMPUTER":GOTO 490
550 IF FKEY<>6 THEN 490
560 IF P2NAME$="COMPUTER" THEN GOSUB 5
90
570 IF P2NAME$<>"COMPUTER" THEN GOSUB
640
580 RETURN
590 ? CHR$(125);"Your name is ";P1NAME
$
600 GOSUB 730
610 IF LEN(NAME$)>10 THEN 590
620 IF NAME$<>"" THEN P1NAME$=NAME$
630 RETURN
640 ? CHR$(125);"Player 1 - your name
is ";P1NAME$
650 GOSUB 730
660 IF LEN(NAME$)>10 THEN 640
670 IF NAME$<>"" THEN P1NAME$=NAME$
680 ? CHR$(125);"Player 2 - your name
is ";P2NAME$
690 GOSUB 730
700 IF LEN(NAME$)>10 THEN 680
710 IF NAME$<>"" THEN P2NAME$=NAME$
720 RETURN
730 NAME$=""
740 ? "If this is correct press RETURN
"

750 ? "If not then enter up to 10 char
acters   and press RETURN ";:INPUT NAM
E$
760 RETURN
770 REM ***THROW STICKS***
780 ? CHR$(125)
790 TOTAL=0:FLAG=0:POKE 77,0
800 IF NAME$="COMPUTER" THEN ? "COMPUT
ER THROWS STICKS":GOTO 840
810 POKE 764,255:? NAME$;" PRESS FIRE"
820 IF STRIG(0)=0 OR STRIG(1)=0 THEN 8
40
830 GOTO 820
840 STP1=0:STP2=0:STP3=0:STP4=0:SCORE=
0
850 RESTORE 990
860 FOR L=0 TO 13
870 SOUND 0,INT(RND(1)*255),14,D
880 READ D:IF STP1=0 THEN POKE STICK1,
D
890 IF STP2=0 THEN POKE STICK2,D
900 IF STP3=0 THEN POKE STICK3,D
910 IF STP4=0 THEN POKE STICK4,D
920 IF STP4>0 THEN POP :GOTO 950
930 FLAG=FLAG+1:IF D=1 OR D=8 THEN GOS
UB 1010
940 NEXT L:GOTO 850
950 SOUND 0,0,0,0:IF TOTAL=0 THEN TOTA
L=5
960 ? NAME$;" SCORES ";TOTAL
970 IF TOTAL=4 OR TOTAL=5 THEN ? "THRO
W AGAIN":GOTO 800
980 RETURN
990 DATA 1,2,3,4,5,6,7,8,7,6,5,4,3,2
1000 REM ***RANDOM STOP***
1010 IF FLAG<2 THEN RETURN
1020 R=INT(RND(1)*2):STP=0
1030 IF R=1 AND D=1 THEN STP=1:SCORE=1
1040 IF R=1 AND D=8 THEN STP=1:SCORE=0
1050 IF STP=1 AND STP1=0 THEN STP1=D:T
OTAL=TOTAL+SCORE:RETURN
1060 IF STP=1 AND STP2=0 THEN STP2=D:T
OTAL=TOTAL+SCORE:RETURN
1070 IF STP=1 AND STP3=0 THEN STP3=1:T
OTAL=TOTAL+SCORE:RETURN
1080 IF STP=1 AND STP4=0 THEN STP4=1:T
OTAL=TOTAL+SCORE:RETURN
1090 RETURN
1100 REM ***CHANGE PLAYERS***
1110 SOUND 0,0,0,0
1120 IF T=2 THEN T=1:NAME$=P1NAME$:GOS
UB 780:GOSUB 1160
1130 IF T=1 THEN T=2:NAME$=P2NAME$:GOS
UB 780:GOSUB 1160
1140 GOTO 1110
1150 REM ***CHOOSE WHICH HORSE MOVES T
HIS TURN***
1160 IF T=2 AND P2NAME$="COMPUTER" THE
N GOSUB 3110:GOSUB 1560:RETURN
1170 ? "MOVE HORSE"
1180 GOSUB 1460:P(0)=PLOFF(T)
1190 ST=STICK(0):ST1=STICK(1):FIRE=STR
IG(0):FIRE1=STRIG(1)
1200 LASTA=A
1210 IF FIRE=0 OR FIRE1=0 THEN POKE P(
PLAYER(T,A))-1,0:GOSUB 1560:RETURN
1220 IF ST<>15 OR ST1<>15 THEN 1240
1230 GOTO 1190
1240 A=A+1:IF A=5 THEN A=1
1250 IF PLAYER(T,A)=44 THEN 1240
1260 IF PLAYER(T,A)=PLAYER(T,LASTA) TH
EN 1190
1270 SOUND 0,128,14,10:POKE P(PLAYER(T
,LASTA))-1,0
1280 POKE P(PLAYER(T,A))-1,10:FOR D=1
TO 50:NEXT D:SOUND 0,0,0,0
1290 GOTO 1190
1300 REM ***SUBTRACT FROM STACK***
1310 B=PLOFF(T)+20:N=PEEK(B)
1320 IF N=STACK(T,4) THEN POKE B,STACK
(T,3):RETURN
1330 IF N=STACK(T,3) THEN POKE B,STACK
(T,2):RETURN
1340 IF N=STACK(T,2) THEN POKE B,STACK
(T,1):RETURN
1350 IF N=STACK(T,1) THEN POKE B,STACK
(T,0):POKE B-20,0
1360 RETURN
1370 REM ***ADD TO STACK***
1380 B=PLOFF(T)+20:N=PEEK(B)
1390 FLAG=0
1400 IF N=STACK(T,0) THEN POKE B,STACK
(T,1):POKE B-20,HORSE(T):RETURN
1410 IF N=STACK(T,1) THEN POKE B,STACK
(T,2):RETURN
1420 IF N=STACK(T,2) THEN POKE B,STACK
(T,3):RETURN
1430 IF N=STACK(T,3) THEN POKE B,STACK
(T,4):FLAG=1:RETURN
1440 RETURN
1450 REM ***PRINT ARROW ON SCREEN***
1460 FOR A=1 TO 4:ARR=PLAYER(T,A)
1470 IF ARR<44 AND ARR>0 THEN POKE P(A
RR)-1,10:POP :RETURN
1480 IF ARR=0 THEN POKE PLOFF(T)-1,10:
POP :RETURN
1490 NEXT A:RETURN
1500 REM ***MOVE PLAYER ONTO BOARD***
1510 P(0)=PLOFF(T):GOSUB 1310:PLAYER(T
,A)=1
1520 POKE P(PLAYER(T,A)),HORSE(T)
1530 GOSUB 1380
1540 RETURN
1550 REM ***MOVE HORSES AROUND BOARD**
*
1560 IF PLAYER(T,A)=0 THEN S=1:GOSUB 1
310:PC1=0:GOTO 1580
1570 GOSUB 1950:GOSUB 1720
1580 FOR X=TOTAL TO 1 STEP -1
```



```
1590 IF X=TOTAL THEN 1610
1600 POKE P(PLAYER(T,A)),PC:POKE P(PLA
YER(T,A))+20,PC1
1610 PLAYER(T,A)=PLAYER(T,A)+1
1620 IF PLAYER(T,A)=21 OR PLAYER(T,A)=
44 THEN POP :GOSUB 2180:RETURN
1630 GOSUB 2410
1640 POKE P(PLAYER(T,A)),HORSE(T):POKE
 P(PLAYER(T,A))+20,STACK(T,S)
1650 SOUND 1,200,10,8
1660 FOR DEL=1 TO 50:NEXT DEL:SOUND 0,
0,0,0:SOUND 1,0,0,0
1670 NEXT X:GOSUB 1820
1680 SOUND 0,0,0,0:SOUND 1,0,0,0:SOUND
 2,0,0,0:SOUND 3,0,0,0:RETURN
1690 FOR N=1 TO 4:IF PLAYER(T,N)=36 TH
EN PLAYER(T,N)=15
1700 NEXT N:RETURN
1710 REM ***MOVE REST OF STACK IF CURR
ENT HORSE ON STACK***
1720 S=0:FOR I=1 TO 4
1730 IF A=I THEN S=S+1:GOTO 1750
1740 IF PLAYER(T,A)=PLAYER(T,I) THEN S
=S+1:GOSUB 1760
1750 NEXT I:RETURN
1760 FOR L=1 TO TOTAL:PLAYER(T,I)=PLAY
ER(T,I)+1
1770 IF PLAYER(T,I)=36 THEN PLAYER(T,I
)=15
1780 IF PLAYER(T,I)=20 THEN PLAYER(T,I
)=43
1790 NEXT L
1800 RETURN
1810 REM ***DOES HORSE LAND ON OTHER H
ORSE?***
1820 S=0:FOR I=1 TO 4
1830 IF PLAYER(T,A)=20 THEN PLAYER(T,A
)=43
1840 IF A=I THEN S=S+1:GOTO 1900
1850 IF PLAYER(T,A)=33 AND PLAYER(T,I)
=40 THEN PLAYER(T,I)=40:S=S+1:GOTO 190
0
1860 IF PLAYER(T,A)=40 AND PLAYER(T,I)
=33 THEN PLAYER(T,I)=40:S=S+1:GOTO 190
0
1870 IF PLAYER(T,A)=43 AND PLAYER(T,I)
=20 THEN PLAYER(T,I)=43:S=S+1:GOTO 190
0
1880 IF PLAYER(T,A)=20 AND PLAYER(T,I)
=43 THEN PLAYER(T,A)=43:S=S+1:GOTO 190
0
1890 IF PLAYER(T,A)=PLAYER(T,I) THEN S
=S+1
1900 IF T=1 THEN IF PLAYER(1,A)=PLAYER
(2,I) THEN PLAYER(2,I)=0:T=2:GOSUB 384
0:GOSUB 1380:T=1
1910 IF T=2 THEN IF PLAYER(2,A)=PLAYER
(1,I) THEN PLAYER(1,I)=0:T=1:GOSUB 384
0:GOSUB 1380:T=2
1920 FLAG=0
1930 NEXT I
1940 POKE P(PLAYER(T,A))+20,STACK(T,S)
:RETURN
1950 REM ***IS HORSE ON CARDINAL POINT
?***
1960 GOSUB 2410
1970 IF PL=5 THEN GOSUB 2050
1980 IF PL=10 THEN GOSUB 2070
1990 IF PL=33 THEN GOSUB 2090
2000 IF PL=36 THEN GOSUB 2110
2010 IF PL=40 THEN GOSUB 2130
2020 IF PL=20 THEN GOSUB 2150
2030 IF PL=43 THEN GOSUB 2150
2040 RETURN
2050 FOR N=1 TO 4:IF PLAYER(T,N)=5 THE
N PLAYER(T,N)=30
2060 NEXT N:RETURN
2070 FOR N=1 TO 4:IF PLAYER(T,N)=10 TH
EN PLAYER(T,N)=37
2080 NEXT N:RETURN
2090 FOR N=1 TO 4:IF PLAYER(T,N)=33 TH
EN PLAYER(T,N)=40
2100 NEXT N:RETURN
2110 FOR N=1 TO 4:IF PLAYER(T,N)=36 TH
EN PLAYER(T,N)=15
2120 NEXT N:RETURN
2130 FOR N=1 TO 4:IF PLAYER(T,N)=33 TH
EN PLAYER(T,N)=40
2140 RETURN
2150 FOR N=1 TO 4:IF PLAYER(T,N)=20 TH
EN PLAYER(T,N)=43
2160 RETURN
2170 REM ***HORSE FINISHES***
2180 SOUND 0,180,10,14:SOUND 1,179,10,
12:SOUND 2,178,10,10:SOUND 3,177,10,8
2190 J=0:FOR N=1 TO 4:IF PLAYER(T,N)>4
3 THEN J=J+1:PLAYER(T,N)=44:GOTO 2210
2200 IF PLAYER(T,N)>20 AND PLAYER(T,N)
<30 THEN J=J+1:PLAYER(T,N)=44
2210 NEXT N
2220 B=PLFINISH(T)+20:POKE B,0:FOR K=1
 TO J
2230 N=PEEK(B)
2240 GOSUB 1390
2250 IF FLAG=1 THEN POP :GOTO 2300
2260 NEXT K:PC=0:PC1=0
2270 FOR DELAY=1 TO 100:NEXT DELAY:SOU
ND 0,0,0,0:SOUND 1,0,0,0:SOUND 2,0,0,0
:SOUND 3,0,0,0
2280 RETURN
2290 REM ***PLAYER WINS-GAME OVER***
2300 SOUND 0,0,0,0:SOUND 1,0,0,0:SOUND
 2,0,0,0:SOUND 3,0,0,0
2310 IF T=1 THEN ? P1NAME$;
2320 IF T=2 THEN ? P2NAME$;
2330 ? " WINS"
2340 FOR I=0 TO 128 STEP 2
2350 FOR P=160 TO 32 STEP -I:SOUND 0,P
,14,10
2360 NEXT P:NEXT I:SOUND 0,0,0,0
2370 ? "PRESS FIRE TO PLAY AGAIN"
2380 IF STRIG(0)=0 OR STRIG(1)=0 THEN
110
2390 GOTO 2380
2400 REM ***REPLOT POINT AFTER HORSE H
AS MOVED***
2410 PL=PLAYER(T,A):PC=PEEK(P(PL)):PC1
=PEEK(P(PL)+20)
2420 IF PL=36 THEN GOSUB 2110
2430 IF T=1 AND PC=HORSE(2) THEN RETUR
N
2440 IF T=2 AND PC=HORSE(1) THEN RETUR
N
2450 IF PL=5 OR PL=10 OR PL=15 OR PL=2
0 OR PL=33 OR PL=40 OR PL=43 THEN POKE
 P(PL),32:POKE P(PL)+20,0:RETURN
2460 IF PL=0 THEN RETURN
2470 POKE P(PL),75:POKE P(PL)+20,0
2480 RETURN
2490 REM ***REDEFINE CHARACTER SET***
2500 DIM ML$(40)
2510 M=PEEK(106)-4
2520 POKE 106,M-1
2530 CHBASE=256*(M)
2540 GRAPHICS 1:SETCOLOR 4,1,0:POKE 75
2,1
2550 POKE 708,12:POKE 709,30:POKE 710,
22:POKE 711,202
2560 ? "NYOUT by Stephen Williamson"
2570 ? "INITIALISING ...Please Wait...
"
2580 RESTORE 2630:FOR L=1 TO 36:READ A
2590 ML$(L,L)=CHR$(A):NEXT L
2600 REM MACHINE CODE ROUTINE COPIES
2610 REM CHARACTER SET FROM ROM TO RAM
2620 A=USR(ADR(ML$),M):POKE 756,M
2630 DATA 104,104,104,133,204,169,224,
133,206,162,0,160,0,177,205,145,203,20
0,208,249
2640 DATA 164,204,200,132,204,164,206,
200,132,206,232,224,5,208,232,96
2650 REM ***ARROW***
2660 FOR I=0 TO 7:READ D
2670 POKE CHBASE+(10*8)+I,D:NEXT I
2680 DATA 0,0,4,2,63,2,4,0
2690 REM ***SQUARE***
2700 FOR I=0 TO 7:READ D
2710 POKE CHBASE+(11*8)+I,D:NEXT I
2720 DATA 126,126,126,126,126,126,126,
126
2730 REM ***HORSE***
2740 FOR I=0 TO 7:READ D
2750 POKE CHBASE+(59*8)+I,D:NEXT I
2760 DATA 255,221,131,163,235,221,239,
255
2770 REM ***STACK 1***
2780 FOR I=0 TO 7:READ D
2790 POKE CHBASE+(27*8)+I,D:NEXT I
```

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```
2800 DATA 207,239,239,239,199,255,0,0
2810 REM ***STACK 2***
2820 FOR I=0 TO 7:READ D
2830 POKE CHBASE+(62*8)+I,D:NEXT I
2840 DATA 199,247,199,223,199,255,0,0
2850 REM ***STACK 3***
2860 FOR I=0 TO 7:READ D
2870 POKE CHBASE+(29*8)+I,D:NEXT I
2880 DATA 227,251,227,251,227,255,0,0
2890 REM STACK4
2900 FOR I=0 TO 7:READ D
2910 POKE CHBASE+(30*8)+I,D:NEXT I
2920 DATA 235,235,227,251,251,255,0,0
2930 REM ***CARDINAL***
2940 FOR I=0 TO 7:READ D
2950 POKE CHBASE+(32*8)+I,D:NEXT I
2960 DATA 60,126,255,255,255,255,126,6
0
2970 REM ***STICKS***
2980 FOR I=0 TO 71:READ D
2990 POKE CHBASE+I,D:NEXT I
3000 DATA 0,0,0,0,0,0,0,0
3010 DATA 255,255,255,255,255,255,255,
255
3020 DATA 126,126,126,126,126,126,126,
126
3030 DATA 60,60,60,60,60,60,60,60
3040 DATA 24,24,24,24,24,24,24,24
3050 DATA 28,20,20,20,20,20,20,28
3060 DATA 60,36,36,36,36,36,36,60
3070 DATA 126,66,66,66,66,66,66,126
3080 DATA 255,129,129,129,129,129,129,
255
3090 RETURN
3100 REM ***COMPUTER THINKS!***
3110 ? "THE COMPUTER IS THINKING..."
3120 REM ***RESET VARIABLES***
3130 FOR I=1 TO 4:CARDINAL(I)=0:FINISH
(I)=0:TAKE(I)=0:STACK1(I)=0
3140 DANGER(I)=0:VALUE(I)=0:NEXT I
3150 FINISH=0:HIGH=0:CARDINAL=0:STACKF
LAG=0
3160 F=0
3170 REM IF ALL HORSES ON SAME POINT
3180 REM OR NO HORSES HAVE STARTED
3190 REM THEN MOVE ONE HORSE
3200 FOR A=1 TO 4
3210 COUNT=0:FOR I=1 TO 4
3220 IF PLAYER(2,A)=PLAYER(2,I) THEN C
OUNT=COUNT+1
3230 NEXT I:NEXT A
3240 IF COUNT=4 THEN A=1:RETURN
3250 REM ***DOES POSSIBLE MOVE EXIST**
*
3260 REM ***IN STACK OR TAKE***
3270 FOR A=1 TO 4
3280 FOR I=1 TO 4
3290 IF I=A THEN 3360
3300 IF PLAYER(2,A)+TOTAL=PLAYER(2,I)
THEN STACK1(A)=1
3310 IF PLAYER(2,A)+TOTAL=PLAYER(1,I)
THEN TAKE(A)=1
3320 IF PLAYER(2,A)+TOTAL=5 AND PLAYER
(1,I)=30 THEN TAKE(A)=1
3330 IF PLAYER(2,A)+TOTAL=10 AND PLAYE
R(1,I)=37 THEN TAKE(A)=1
3340 IF PLAYER(2,A)+TOTAL=36 AND PLAYE
R(1,I)=14 THEN TAKE(A)=1
3350 IF PLAYER(2,A)+TOTAL=33 AND PLAYE
R(1,I)=40 THEN TAKE(A)=1
3360 NEXT I:NEXT A
3370 REM ***CAN HORSE FINISH***
3380 REM ***OR LAND ON CARDINAL?***
3390 FOR I=1 TO 4
3400 IF PLAYER(2,I)<21 AND PLAYER(2,I)
+TOTAL>21 THEN FINISH(I)=1
3410 IF PLAYER(2,I)<44 AND PLAYER(2,I)
+TOTAL>43 THEN FINISH(I)=1
3420 IF PLAYER(2,I)+TOTAL=5 THEN CARDI
NAL(I)=2
3430 IF PLAYER(2,I)+TOTAL=10 THEN CARD
INAL(I)=3
3440 IF PLAYER(2,I)+TOTAL=33 THEN CARD
INAL(I)=4
3450 NEXT I
3460 REM ***IS HORSE IN DANGER OF BEIN
G TAKEN?
3470 FOR A=1 TO 4
3480 FOR I=1 TO 4
3490 IF PLAYER(2,I)=44 THEN 3580
3500 F=PLAYER(2,A)-PLAYER(1,I)
3510 IF F>0 AND F<4 THEN DANGER(A)=1
3520 IF PLAYER(2,A)=33 AND PLAYER(1,I)
>36 AND PLAYER(1,I)<40 THEN DANGER(A)=
1
3530 IF PLAYER(2,A)=14 THEN IF PLAYER(
1,A)>32 AND PLAYER(2,A)<37 THEN DANGER
(A)=1
3540 IF PLAYER(2,A)=20 THEN IF PLAYER(
1,A)>39 AND PLAYER(2,A)<44 THEN DANGER
(A)=1
3550 IF PLAYER(1,A)=10 THEN IF PLAYER(
2,A)<=40 AND PLAYER(2,A)>37 THEN DANGE
R(A)=1
3560 IF PLAYER(1,A)=5 THEN IF PLAYER(2
,A)<=33 AND PLAYER(2,A)>29 THEN DANGER
(A)=1
3570 IF PLAYER(1,A)=33 THEN IF PLAYER(
2,A)<=44 AND PLAYER(2,A)>33 THEN DANGE
R(A)=1
3580 NEXT I
3590 NEXT A
3600 REM ***FIND MOVE VALUE FOR EACH H
ORSE***
3610 FOR I=1 TO 4
3620 IF DANGER(I)>0 THEN VALUE(I)=VALU
E(I)+2
3630 IF CARDINAL(I)>0 THEN VALUE(I)=VA
LUE(I)+CARDINAL(I)
3640 IF STACK1(I)>0 THEN VALUE(I)=VALU
E(I)+2
3650 IF TAKE(I)>0 THEN VALUE(I)=VALUE(
I)+INT(RND(1)*2)+2
3660 IF PLAYER(2,I)=0 THEN VALUE(I)=VA
LUE(I)+1
3670 IF PLAYER(2,I)>29 THEN VALUE(I)=V
ALUE(I)+1
3680 IF FINISH(I)>0 THEN VALUE(I)=VALU
E(I)+1
3690 NEXT I
3700 REM ***FIND THE HIGHEST MOVE VALU
E***
3710 HIGH=1
3720 FOR I=1 TO 4
3730 IF VALUE(I)>VALUE(HIGH) THEN HIGH
=I
3740 NEXT I
3750 REM IF ANY MOVE VALUES ARE EQUAL
3760 REM THEN FIND HIGHEST POINT
3770 A=HIGH
3780 FOR I=1 TO 4:IF VALUE(HIGH)=VALUE
(I) THEN GOSUB 3810
3790 NEXT I:A=HIGH:IF PLAYER(2,A)>43 T
HEN VALUE(A)=-1:GOTO 3710
3800 RETURN
3810 IF PLAYER(2,I)>PLAYER(2,HIGH) THE
N HIGH=I
3820 RETURN
3830 REM ***CAPTURE SOUND EFFECT***
3840 SOUND 0,199,10,14:SOUND 1,200,10,
12:? CHR$(125);
3850 IF T=2 THEN ? P2NAME$;
3860 IF T=1 THEN ? P1NAME$;
3870 ? " IS KNOCKED OFF THE BOARD"
3880 FOR DEL=1 TO 60:NEXT DEL:RETURN
```

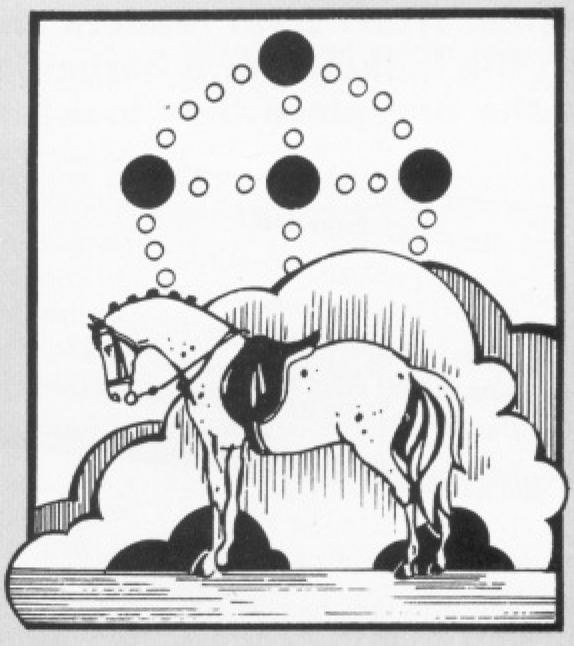
Get it right!

10 CP1 (Y)	220 RK8 (X)	430 8OM (O)	640 336 (6)	850 X4U (8)	1060 8ON (Q)	1270 42D (C)	1480 YF6 (V)	1690 D93 (X)
20 CP2 (3)	230 438 (D)	440 RY2 (J)	650 PQP (J)	860 TSJ (O)	1070 7LW (7)	1280 DKV (U)	1490 58E (H)	1700 5VE (K)
30 CP3 (X)	240 2GY (T)	450 6D4 (O)	660 N78 (9)	870 MP7 (A)	1080 7T5 (G)	1290 PTD (J)	1500 DKN (M)	1710 DVN (Q)
40 CP4 (4)	250 UN6 (Q)	460 TWP (C)	670 D9F (G)	880 98T (T)	1090 VVK (8)	1300 DAN (P)	1510 P2T (G)	1720 HON (U)
50 CP5 (Y)	260 1YC (V)	470 YSD (H)	680 3LQ (M)	890 19X (7)	1100 D2N (F)	1310 QO6 (S)	1520 W2P (D)	1730 OSU (H)
60 74G (N)	270 PPK (F)	480 DUV (Y)	690 Q7P (5)	900 O87 (Q)	1110 YSS (7)	1320 3N7 (O)	1530 T5H (6)	1740 C4E (A)
70 LKQ (2)	280 DUT (7)	490 3JF (E)	700 ML9 (X)	910 OFG (X)	1120 OLT (Y)	1330 3J7 (R)	1540 W6K (O)	1750 5VE (6)
80 WSA (2)	290 EWK (5)	500 F45 (M)	710 CJJ (V)	920 OAY (2)	1130 ONA (Q)	1340 3E7 (O)	1550 DVN (5)	1760 6M9 (O)
90 E22 (6)	300 F3W (F)	510 73J (W)	720 RFC (L)	930 M1X (A)	1140 P8D (Y)	1350 5D1 (7)	1560 LGD (C)	1770 QCQ (O)
100 XCQ (T)	310 OA3 (8)	520 FHA (W)	730 QF1 (K)	940 84E (3)	1150 DDN (R)	1360 W2K (2)	1570 MOQ (7)	1780 Q3T (5)
110 K53 (Q)	320 FE5 (T)	530 U1N (4)	740 KUH (J)	950 531 (W)	1160 7RS (5)	1370 DRN (4)	1580 156 (P)	1790 PCS (5)
120 AJ7 (U)	330 SCU (6)	540 2T4 (U)	750 O9V (T)	960 WW4 (1)	1170 A4E (G)	1380 QF6 (9)	1590 GT7 (9)	1800 WAK (4)
130 2JW (Q)	340 EN1 (Q)	550 FFM (3)	760 RXC (Q)	970 D7Y (S)	1180 M28 (N)	1390 QMT (Y)	1600 7VY (9)	1810 EON (6)
140 32E (9)	350 3PM (D)	560 KW5 (3)	770 DQY (V)	980 S6E (W)	1190 PY5 (4)	1400 CFA (Y)	1610 W4C (7)	1820 H4N (E)
150 E4M (Q)	360 3RP (H)	570 GEH (P)	780 PN1 (K)	990 VYY (A)	1200 TCG (P)	1410 3E7 (4)	1620 ALS (3)	1830 NUT (9)
160 R21 (U)	370 153 (N)	580 S69 (X)	790 NNG (K)	1000 CXN (D)	1210 D5S (P)	1420 3N7 (Y)	1630 T98 (H)	1840 OYQ (O)
170 LMQ (H)	380 RR9 (2)	590 KL4 (E)	800 GGJ (M)	1010 T6C (8)	1220 2HY (W)	1430 AHR (U)	1640 FOK (N)	1850 FSN (F)
180 DXW (M)	390 DYU (A)	600 P3P (R)	810 AAQ (C)	1020 GM5 (5)	1230 PFD (N)	1440 W2K (W)	1650 63S (M)	1860 FUF (5)
190 EFA (4)	400 DOT (K)	610 MP8 (2)	820 C8J (A)	1030 FC8 (R)	1240 EVD (X)	1450 DRN (R)	1660 VLL (F)	1870 FYJ (7)
200 DKK (7)	410 7HF (6)	620 CNF (6)	830 R9F (M)	1040 FUO (F)	1250 W4N (C)	1460 YSE (F)	1670 4WS (W)	1880 FYR (S)
210 XKF (7)	420 7GG (P)	630 RKA (8)	840 KO6 (1)	1050 7TE (1)	1260 RVX (O)	1470 R4C (F)	1680 47W (G)	1890 QCE (F)

1900 TA4 (L)	2200 33Y (F)	2500 WG2 (C)
1910 TD1 (A)	2210 NCT (E)	2510 3AT (A)
1920 QXT (U)	2220 HLS (M)	2520 Q48 (O)
1930 P1S (Y)	2230 VG3 (D)	2530 C5C (3)
1940 SKT (J)	2240 SUS (G)	2540 EGG (2)
1950 EDN (K)	2250 740 (4)	2550 Y4D (5)
1960 TU8 (7)	2260 AHH (W)	2560 7JY (W)
1970 P8C (N)	2270 MOH (N)	2570 27Q (6)
1980 T36 (H)	2280 W2L (H)	2580 DN7 (Q)
1990 TAP (4)	2290 DRP (P)	2590 PYT (E)
2000 RH7 (4)	2300 J5W (O)	2600 DPP (C)
2010 RK7 (4)	2310 HVS (6)	2610 DRP (E)
2020 RM7 (4)	2320 J19 (H)	2620 RJ5 (O)
2030 RSQ (M)	2330 YRF (T)	2630 Y6D (X)
2040 VKL (L)	2340 H4L (T)	2640 9AU (V)
2050 DYR (8)	2350 C1E (T)	2650 EOP (U)
2060 5DF (5)	2360 QAK (P)	2660 EKE (8)
2070 ASV (G)	2370 YXE (W)	2670 UT5 (A)
2080 5HF (1)	2380 HCD (6)	2680 8YE (4)
2090 CC8 (E)	2390 Q1W (Y)	2690 E8P (O)
2100 54F (1)	2400 DFP (R)	2700 EAE (K)
2110 C54 (K)	2410 6WM (D)	2710 UL5 (J)
2120 58F (X)	2420 S47 (F)	2720 T5Q (R)
2130 C38 (H)	2430 AWD (3)	2730 EOP (X)
2140 VPL (Q)	2440 AWD (F)	2740 EKE (E)
2150 AWM (M)	2450 NG5 (O)	2750 VC5 (G)
2160 VTL (L)	2460 C46 (X)	2760 TR3 (C)
2170 DHP (Q)	2470 V64 (N)	2770 E8P (D)
2180 AMN (K)	2480 WAL (L)	2780 ETE (V)
2190 QXC (X)	2490 EOP (P)	2790 VC5 (W)

2800 SL4 (Q)	3100 D2Q (G)	3400 XEW (H)
2810 EOP (P)	3110 CC8 (T)	3410 XKE (X)
2820 EKE (3)	3120 D6Q (X)	3420 T37 (X)
2830 V65 (6)	3130 VNK (G)	3430 RJ6 (H)
2840 T6V (5)	3140 8J3 (J)	3440 RTA (3)
2850 E8P (5)	3150 XT1 (W)	3450 NJU (2)
2860 ETE (J)	3160 DEQ (S)	3460 DTQ (5)
2870 VE5 (N)	3170 DHQ (V)	3470 V2L (F)
2880 SVV (V)	3180 DKQ (T)	3480 W4L (2)
2890 EHP (Y)	3190 DMQ (V)	3490 XMU (N)
2900 EKE (A)	3200 UDL (N)	3500 P24 (L)
2910 UX5 (F)	3210 F7Y (U)	3510 44H (R)
2920 SMV (E)	3220 7TW (O)	3520 G9C (T)
2930 E8P (D)	3230 1EC (3)	3530 T2S (R)
2940 ETE (R)	3240 4XK (Q)	3540 T7Q (1)
2950 V85 (W)	3250 DHQ (L)	3550 VGY (Y)
2960 WDC (E)	3260 DKQ (Q)	3560 WM7 (H)
2970 EHP (E)	3270 UTL (Y)	3570 VPL (K)
2980 D11 (K)	3280 VVL (H)	3580 NUU (H)
2990 KXT (M)	3290 7UD (X)	3590 NEU (H)
3000 14H (Y)	3300 7F9 (H)	3600 DPQ (Q)
3010 STV (M)	3310 5X3 (P)	3610 VXL (R)
3020 S9R (Y)	3320 TYE (X)	3620 TAA (Y)
3030 G3F (C)	3330 RD1 (R)	3630 DM6 (H)
3040 G5F (X)	3340 RQ5 (3)	3640 UQJ (L)
3050 FGT (W)	3350 RPE (O)	3650 DQ9 (2)
3060 H1C (5)	3360 1QC (2)	3660 U2E (R)
3070 SE3 (9)	3370 DRQ (6)	3670 U6G (A)
3080 SYA (F)	3380 DTQ (1)	3680 UUV (S)
3090 VVM (C)	3390 W2L (F)	3690 P1U (T)

3700 DTQ (W)	3770 TP8 (8)	3840 YDN (C)
3710 QQE (F)	3780 HL5 (U)	3850 JUA (R)
3720 W4L (1)	3790 MYU (S)	3860 JTT (U)
3730 GOD (Y)	3800 WAM (T)	3870 3KD (5)
3740 NUU (Y)	3810 VN8 (U)	3880 8NH (9)
3750 E4Q (S)	3820 WFM (R)	
3760 E6Q (Y)	3830 E4Q (R)	



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Tune in to Morse on your Atari

JUST a few words to whet the appetite of all Atari 8 bit users who would like to do something else than just play games on their micro.

With the aid of a short wave radio the Atari can listen to morse code and display the translation on the screen, decode radio teletype signals and listen to weather satellites. This information can be displayed as a picture along with temperature and cloud information.

Although it all sounds very expensive it needn't be. I use my 800XL to decode morse, teletype and fax pictures on simple home made interfaces that plug into the joystick ports and they all cost me less than £10 each to build.

Perhaps if people realised the quality of the Atari and its broad spectrum of capabilities it might be better thought of. – **M. Wright, Chelmsford, Essex.**

● Thanks for the letter, other readers might be interested to see your interfaces and gadgets. So, write in and tell us more, we are always interested to see what Atari enthusiasts around the country are doing.

Basically unfair

OVER the last six or seven issues of Atari User I have seen frequent mention of the Basic XE/XL programming languages. Nearly all reports on them have stated that they are far superior to the old 8k Basic built into an XE/XL micro.

So if they are so good why don't you publish listings in the magazine for these super languages? – **James Bee, Jesmond, Newcastle upon Tyne.**

● The Basic XE/XL language cartridges offer a far better programming environment due to the number of extra routines – sort, procedures and many more – you get with them. They are also a lot faster than your old Basic.

We would like to publish such listings but it would be unfair to readers who only have the standard Basic. If there was a sufficient user base of readers with these cartridges we could consider a section in the future.

Spectral answer

WHAT a wonderful idea it was of yours to run two maps showing the caves and monsters of the Eidolon. After following the routes plotted in the May issue and then the hints in the June one I finally completed the game.

But now I have a little question for you to answer for me if you can.

What does the word Eidolon – used in the title of the game – mean? I know it doesn't have any important relevance, but I was curious to see if the people at Atari User are on the ball. – **Sean Canning, Manchester.**

● Right on the ball! Eidolon means ghost or spectre.

Cure that keyboard glitch

CAN you please help me with a problem I have with my 130XE computer? My Option key has stopped working and I can't figure out what to do.

Do you know of a quick cure to my predicament or will I have to send it to someone to repair it? – **Richard Head, Westminster, London.**

● Unfortunately the 130XE keyboard can suffer from two small problems that luckily, rarely raise their ugly heads. The first is that the metal tracks that connect the keys to the main PCB tend to oxidise. This stops them making a circuit when a key is pressed.

The second glitch is the cause behind this oxidisation problem. The function keys are fed with their own 5v power supply and it's this that causes the build up of oxide on the track.

It may be possible for you to fix both of these yourself but the job of doing so is quite involved.

However, for the stout of heart, here goes: Remove the lid from the micro – the four screws on the underside hold it in place – and then gently unplug the keyboard membrane from the connector on the main board.

Unscrew the main PCB and twist open the metal tags so that you can remove the casing. Now you will have to locate resistor R95.

You'll find it in the bottom right corner of the board where the ? and Shift keys would be, but don't worry, it's labelled underneath. Now carefully unsolder it.

If this is replaced by a 1k (0.25W) resistor the track oxidising problem will be solved.

If this doesn't effect a cure immediately you may have to take the keyboard to bits and clean the tracks – a can of PCB Cleaner (code 51-11108) from Cirkit will do the trick.

Be very careful not to take off the tracks altogether, as they are very easily damaged.

This is not an easy task to undertake and quite possibly a little too much for a novice. However, a service engineer familiar with Atari equipment will be able to do the job for you.

No match

PLEASE can you tell me the address of Ocean Software? You see I want to buy Matchday football. I've looked for it everywhere but I haven't seen it advertised, so now I want to write to the company directly. – **Robert Maddison, Dobwalls, Cornwall.**

● The address is: Ocean, 6 Central Street, Manchester, M2 5NS and the phone number is 061-832 6633.

However, Ocean hasn't brought Matchday out for the Atari and doesn't plan to do so.

Happy with cartridges

IN the January issue of Atari User there was an article about the re-release of several games by Atari on rom cartridges. Being new to the Atari range of com-

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puters – having just bought an 65XE and tape deck – I found it made for informative and interesting reading.

Can you tell me if my micro with 64k of memory will run the games mentioned? And if they won't, is there any way that I can modify my computer so that they will work? – **Martin Austin-Price, Somerset.**

● The rom cartridges mentioned in the article will plug into any Atari computer – no matter what amount of memory it possesses – and work perfectly well. This is because all the program for the game is held in a rom chip on the cartridge board and executes directly from it.

Thousands wait for games

AFTER reading the letter by Stephen Buxton in the June issue of Atari User I felt I had to write to express my feelings on what is now a rather serious subject.

It appears the 8 bit range of Atari computers have been deemed unsuitable for the current market. This is an appalling situation.

Judging by the letters you have published and the popularity of your magazine I find myself still confused as to why software houses say there is no market.

If a company produced a game and sold it at £5 and then went on to sell only 2,500 copies that's still £12,500. I may not know much about marketing, but surely there is still a profit margin there somewhere.

A few years ago there was supposed to have been more than 300,000 Atari 8 bit computers sold in Britain and Europe. Even if half of these have sold their computers and bought STs that still leaves a substantial number of loyal followers.

Even after 10 years the Atari is a machine that is far superior to any other 8 bit on the market. I find it very upsetting to think that my computer will soon become obsolete. However, this won't make me buy a new one, I still know which is the best. – **Andrew Reid, Newcastle-Upon-Tyne.**

● Writing and selling a computer game isn't as simple as you seem to think. Development and royalty costs soon cut down the profit margin.

The main reason behind software houses not producing games is that distributors won't take the goods once they have been written.

These are the culprits behind the decline of the 8 bit Atari. What's the point of spending money developing a game if you can't get anyone to sell it for you?

£10 LETTER

Yet another dimension

IN the May 1988 issue of Atari User there was a letter from Mark Wilkie who wanted a Graphics 8 screen dump routine that will work with the 3D Plotter program in the March 1987 issue.

This simple addition to it will allow screen dumps to be made to all Epson-compatible printers. All you have to do is load in the original program and add these lines:

```
1000 T=1:H=160:B=PEEK(88)+P
EEK(89)*256:M=0:LPRINT CHR$
(27);CHR$(64);CHR$(27);CHR$
(65);CHR$(8);:POKE 764,255
1010 FOR F=0 TO 39:OPEN #1,
8,0,"P:":PRINT #1;CHR$(27);
CHR$(42);CHR$(M);CHR$(H);CH
R$(L);:FOR G=159 TO 0 STEP
-1
1020 IF PEEK(764)=255 THEN
D=PEEK(B+(G*40)+F):PRINT #
1;CHR$(D);:NEXT G:CLOSE #1
:NEXT F
1030 RETURN
```

and then alter the main program. Here are the changes:

```
420 POKE 764,255:?"INPUT A
NGLE ":INPUT NN
540 NEXT L
541 ? "PRESS 'D' TO DUMP O
R <RET> TO CONT"
542 IF PEEK(764)=58 THEN ?
"DUMPING":GOSUB 1000:GO
TO 541
543 IF PEEK(764)=12 THEN G
OTO 420
544 GOTO 542
550 POKE 764,255:RETURN
```

Another useful change to the program is to change line 570 to read:

```
570 X2=(S=7)+(S=6)+(S=5)-(
S=10)-(S=11)-(S=9):Y2=(S=1
3)+(S=9)+(S=5)-(S=14)-(S=1
0)-(S=6):MPX=MPX+X2*3:MPY=
MPY+Y2*3
```

This allows you to include diagonal movement when drawing the 3D shape. – **Michael Clark, Lichfield, Staffs.**

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Stuck-up monsters

AFTER opening my June issue of Atari User I was pleasantly surprised to see the software and hardware catalogues from Silica Shop. I didn't know there were so many games available for my Atari micro.

After all the letters lately complaining about companies ignoring the Atari 8 bit range it's nice to see Silica supporting it – even though it is only one company out of hundreds.

My only complaint is that it was sellotaped across the superb centre page spread of the Eidolon monsters. – **Nicholas Latbowsky, Washington D.C.**

● With the catalogue being so bulky it needed to be attached at two corners. The only place with sufficient white space, to avoid destroying text, was the centre pages.

Rally round for a view

PLEASE can you tell me what happened to the Speed Run rally game by Red Rat? I read about it in Atari User a while ago and saw it advertised by a dealer in the magazine, but I haven't seen any mention of it since. When is it going to be released? – **Rolf Heelas, London.**

● It appears that Red Rat is still doing some development work on the game and plans to release it very soon.

We took a look at the pre-release version and were very impressed – it's well worth the wait.

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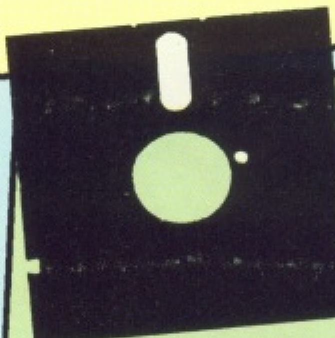
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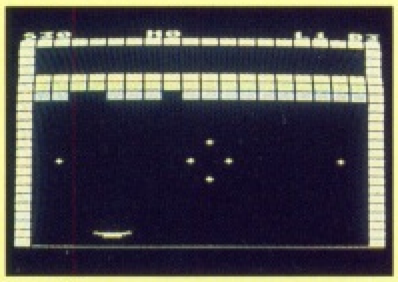
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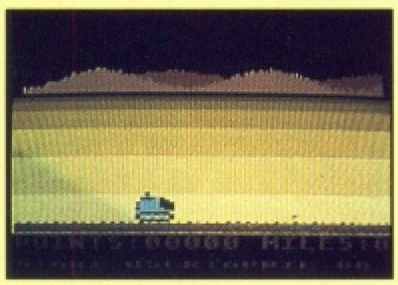
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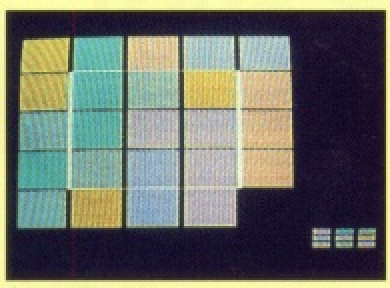
Breakin



Tyrants of Torment



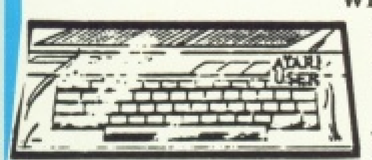
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Colour Puzzle

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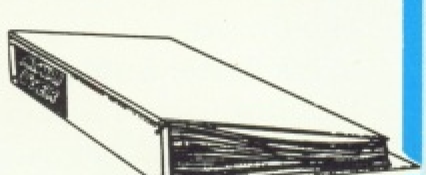


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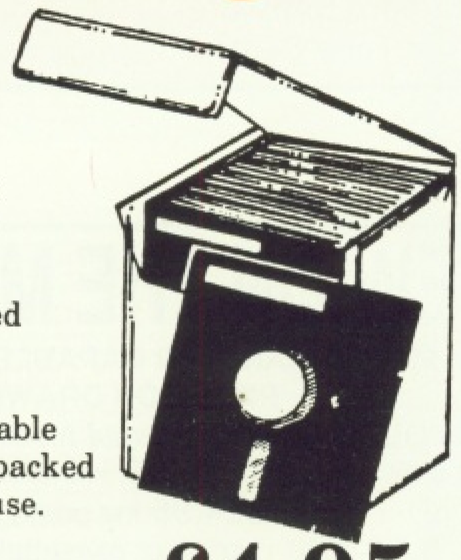
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